SOCIETY OF AMERICAN FORESTERS 1900

Journal of FORESTRY

December 1961
Volume 59
Number 12

Including Index

The Combined CIF-SAF Annual Meeting

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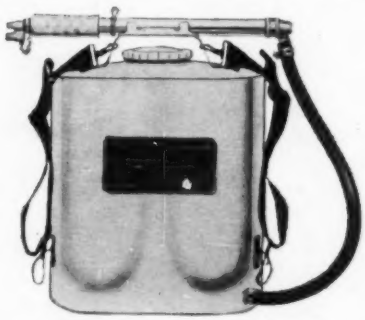

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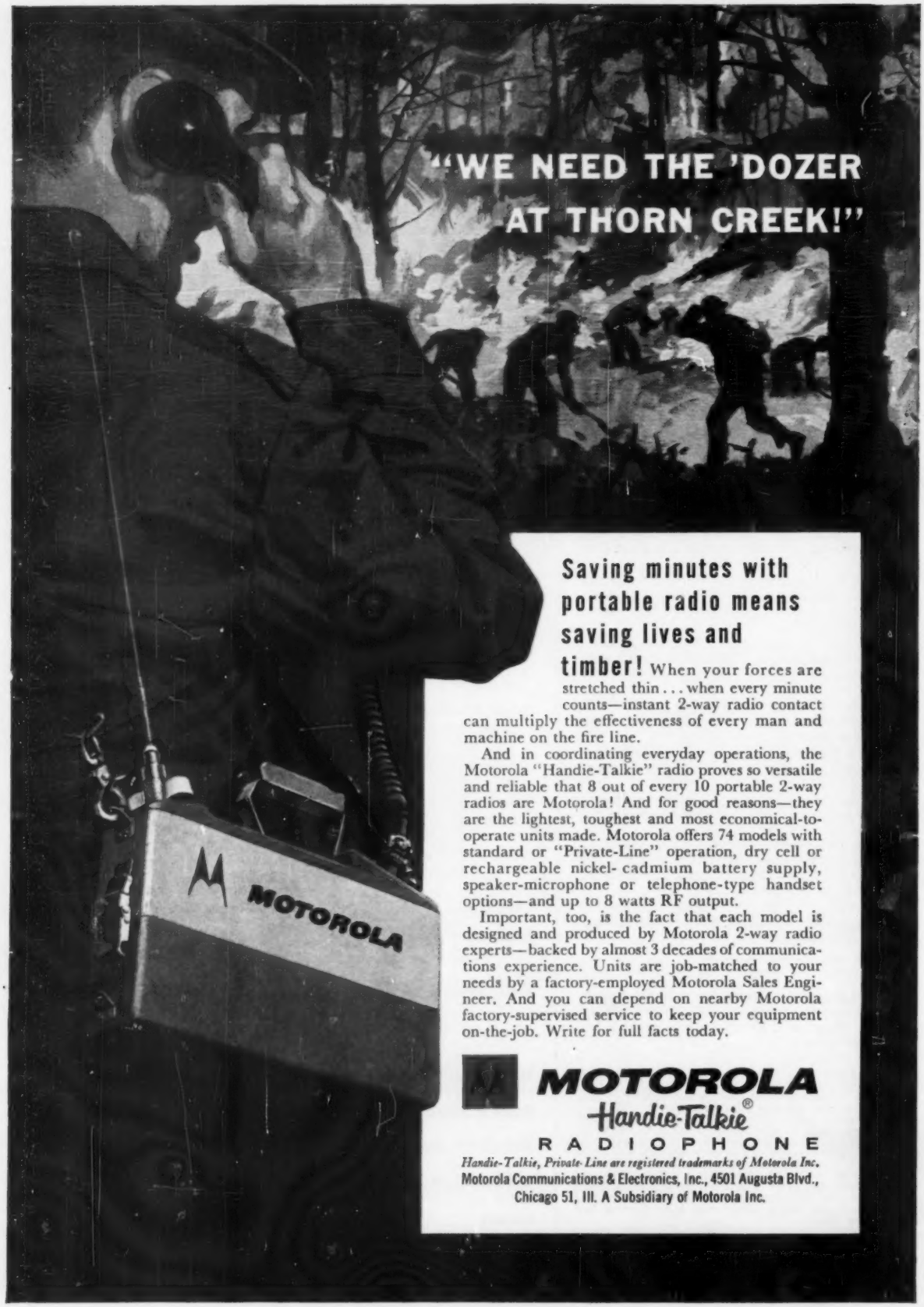

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Journal of Forestry

Official Organ of the Society of American Foresters

Canadian and U. S. Foresters Hold Combined Meeting

THE Canadian Institute of Forestry and the Society of American Foresters held a joint annual meeting at the Leamington Hotel, Minneapolis, Minn., October 8-11, 1961, with the SAF serving as the host group. The CIF was host at a similar joint meeting held in Montreal, Canada, in 1952.

Total registered attendance was 1,258. Of this total 257 were ladies, 819 SAF members and guests, and 182 CIF members. For the SAF this constituted its 61st annual meeting.

Three days of general and technical sessions were preceded, on October 8, by the following related or supporting meetings:

SAF Council (which also met on October 11).*

CIF Board of Directors.

SAF Council and Section delegates.*

Xi Sigma Pi.

Extension Foresters.

Association of Consulting Foresters.

Editorial Board of the JOURNAL OF FORESTRY.

Commission on Forestry of the Land-Grant Institutions.

The General Session

Carl H. Stoltenberg, head of the Department of Forestry, Iowa State University, served as chairman of the opening general session held on the morning of October 9. President Charles A. Connaughton, on behalf of the SAF, welcomed Canadian guests and emphasized the appropriate meeting theme of "Forestry's Common Frontiers."*

President Lowell Besley of Montreal responded for the Canadian Institute of Forestry.* There then followed the presentation of two keynote addresses, by Harry S. Mosebrook, the Weyerhaeuser Company, New York, and Dean J. W. B. Sisam of the Faculty of Forestry, University of Toronto, Canada.*

Business Sessions

The two professional organizations held separate business sessions on the afternoon of October 9.

At the Society Affairs Session of the SAF, President Connaughton presided and presented his annual report.* Reports on the JOURNAL and *Forest Science* were followed by those of the Committees for the Advancement of Forestry Education, on International Relations, for the Study of Education, and on Forestry Research.*

Special Program on the Recreational Demands on Forests

Under the chairmanship of William C. Bramble, head of the Department of Forestry and Conservation, Purdue University, a general session of Canadian and U. S. foresters followed the business meetings. The principal subject under consideration was "The Establishment of Wilderness Areas by Congressional Legislation." Frank W. Lara, forester of the National Wildlife Federation, spoke in support of such establishment while H. R. Glascock, Jr., forest counsel, Western Forestry and Conservation Association, defended the case for administrative establishment and regulation of wilderness areas. (Both talks were published as articles in the October issue of the JOURNAL.) There was considerable discussion and comment from the floor following the two presentations.

Technical Sessions

Joint technical sessions at which there was equal participation of CIF and SAF chairmen and speakers were held on October 10 and 11. Full-day sessions were devoted to Forest Management, Forest Fire, and Silviculture; half days to Forest Recreation, Forest-Wildlife Management, Watershed Management, Forestry Education, Forest Products, Forest Economics and Policy, and Range Management.

Business meetings of SAF subject matter Divisions were held in conjunction with the technical sessions, including committee reports and election of officers.* This was the first meeting of the SAF Division of Forest Fire, following Council approval of formation of the Division.

There will not be published this year any *Proceedings* of the annual meeting carrying all technical papers presented there. U. S. authors of papers delivered have been invited, if they wish, to submit their papers to be considered by the editorial board for publication in the JOURNAL. The *Forestry Chronicle* of the CIF has announced its intention of publication of most or all meeting papers by Canadians in its March 1962 issue. Copies of this issue of the *Chronicle* will be available for purchase by SAF members at $2 per copy. Orders should be addressed as soon as possible to J. J. E. Dosne, Secretary-Manager, Canadian Institute of Forestry, c/o Macdonald Post Office, Macdonald College, P. Q.

*Asterisk indicates the event, or address, is reported in detail, or published, elsewhere in this issue of the JOURNAL.

THREE presidents. Professor E. C. Mobbs, *left*, President of the Society of Foresters of Great Britain, talks with Charles A. Connaughton, *center*, SAF President, and Lowell Besley, CIF President.

The Annual Dinner

G. W. I. Crieghton, past CIF president, served as toastmaster at the annual dinner held on October 11.

Two awards for achievement in biological research leading to the advancement of forestry were presented by SAF President Connaughton on behalf of the Council. They were made to Dr. Reginald Ernest Balch, Canadian Department of Forestry, Fredericton, N. B., and Dr. Paul Jackson Kramer, Duke University, Durham, N. C.*

The Canadian Forestry Association award was presented by Benjamin F. Avery to Fred A. Harrison, Montreal, and the CIF Gold Medal award was given to Dean J. W. B. Sisam for transmittal to its winner, a forestry student of the University of Toronto.

On behalf of the Council and the members, SAF past president George A. Garratt presented a special award for meritorious service to Miss L. Audrey Warren on her retirement as business manager of the SAF.*

Scheduled dinner speaker, John H. Hinman, honorary chairman of the board and director of woodlands, International Paper Company, New York City, was unable to be present due to illness. His prepared address, however, was delivered by John Tower.*

Entertainment at the dinner and a dance following it concluded the combined meeting.

Miscellaneous

Numerous alumni functions were held at various times.

Although no organized field trips were held, those traveling to Minneapolis were furnished, in advance and at the meeting, copies of a map indicating points of interest in forestry throughout adjacent regions of the U. S. and Canada.

Twelve commercial and eight educational exhibits, aided by excellent hotel facilities, made an unusually fine display.

Thanks

Special thanks were expressed by the ladies in attendance for the interesting activities made available for their enjoyment. Other than that it is impossible to single out for mention the many workers who made a highly successful combined CIF-SAF meeting possible. We can only note that the committees for the meeting were as follows:

General Chairman: Frank H. Kaufert (SAF); co-chairman: George R. Sonley (CIF).

Program Committee: George Amidon (SAF), chairman; A. S. Bray (CIF), co-chairman.

Local arrangements: M. B. Dickerman, chairman; Donald P. Duncan, vice chairman.

Registration: Earl Adams.

Exhibits: W. R. Miles.

Hotel Reservations and Housing: Clarence Eggen.

Meeting and Conference Rooms: R. M. Brown.

Projection and Amplifying Equipment: Marvin Smith.

The Annual Dinner: Sidney Weitzman.

Field Trips: Frank Frederickson.

Ladies Activities: Mrs. M. B. Dickerman.

Information and Publicity: James T. Morgan (SAF); W. L. Sleeman (CIF).

COVER: The crossed flags, which symbolize the community of interest of Canada and the United States, were used to decorate the meeting program and dinner menu. Many foresters will recognize this as also the symbol of the Western Forestry and Conservation Association. Other photos, reading clockwise from the flags: John Tower delivering banquet address prepared by John R. Hinman. Paul M. Dunn delivering a committee report at the Society Affairs session of the SAF. Frank H. Kaufert, co-chairman of the meeting. Heads of the various ladies committees. Dean J. W. B. Sisam, CIF keynote speaker. B. F. Avery presents Canadian Forestry Association Award to F. A. Harrison. Harry Mosebrook, SAF keynoter. Center: the annual banquet.

Welcome by the President of SAF

Charles A. Connaughton

As President of the Society of American Foresters I'm pleased to welcome you to this meeting. Although all are included in this welcome, the members and officers of the SAF direct attention especially to our friends and fellow foresters from Canada. We are delighted to have you join us in Minneapolis.

It is the mutual intention of the Canadian Institute of Forestry and the Society of American Foresters to hold a combined meeting each decade. You will recall that our last joint meeting was held in Montreal in 1952. There we greatly enjoyed Canadian hospitality and we welcome the opportunity to reciprocate on this occasion. In this connection, I ask that throughout this entire meeting each member of the SAF make a special point to extend a warm hand of friendship to our northern neighbors.

In these troubled times of international tension it is refreshing, and I hope prophetic, that foresters from two countries can assemble in a meeting organized under the theme "Forestry's Common Frontiers." We know, as technicians, that forestry, as with any other profession, can advance most rapidly only when there are common frontiers and common knowledge. Furthermore, as citizens of our own countries and of the world, we know that the interests of our neighbors and ourselves can be served best when no barriers exist in the exchange of knowledge and friendships. It is gratifying to me, therefore, to be able to participate in a meeting between two countries where ideas will be exchanged freely as progress is reported in forest administration, research, education, and extension. I'm sure that most members of the audience are also members of the CIF or SAF. However, regardless of membership in either organization, any one interested in forestry is welcome to attend.

From the standpoint of the SAF, we are pleased that this meeting could be held in Minneapolis. In our common frontier, this is a key location, indeed. Also, at this location, we have in residence some exceedingly capable foresters who have worked long and hard to provide us with a well-framed meeting. They have made excellent arrangements for us. How effectively we use them depends largely on individual initiative and preference. I urge, therefore, that each one make a special point to grasp the utmost in the technical, professional, and social benefits available.

To give this meeting a truly international flavor, I'm pleased to welcome the President of the Society of Foresters of Great Britain. Professor E. C. Mobbs, who is a visiting professor at the Oregon State University School of Forestry, will be with us for the entire meeting. Both the CIF and SAF are delighted to acknowledge his presence.

It is a special pleasure for me at this meeting to be joined on this platform by my old friend, Lowell Besley, President of the Canadian Institute of Forestry. With great personal pride and strong professional respect I present him to you.

❦❦❦

Response by the President of CIF

Lowell Besley

On behalf of the members of the Canadian Institute of Forestry, I am very happy for this opportunity to thank you, President Connaughton, for the warm welcome you and fellow foresters in SAF have extended to us today. I can assure you that the cordial sentiments which you have so graciously expressed are fully reciprocated. This all sounds mighty formal among first cousins who feel so much at home on both sides of the border. Perhaps there is no better evidence of this free interchange than the fact that I have the privilege of performing this pleasant task today.

And yet the easy atmosphere of genuine friendship in which we meet should not obscure the fact that there are notable differences as well as many similarities in our two countries. In our deliberations under the theme "Forestry's Common Frontiers" we can make the most progress by recognizing these differences as well as these similarities, making them common knowledge as my friend Charlie has said, and mounting a coordinated attack upon the areas of ignorance. With a productive forest area slightly larger than that of the United States, Canada has only a tenth as many people. The land ownership and use patterns are entirely different, since in Canada nine-tenths of the productive forest land is owned by the government (eight-tenths provincial, one-tenth federal) and only 4 percent of it is in farm woodlands. Furthermore, of all the productive forest, nearly seven-tenths is without plans for immediate utilization. All this poses somewhat of a problem to the forester in Canada who is anxious to institute intensive forestry practices on the land for which he is responsible. This same problem faced the United States forester in the past, but today he has to be more concerned with holding on to the land itself for timber production purposes and with persuading the owners of small tracts to practice better forestry in order to meet demand.

We have that diversity of viewpoint and relative priority which stimulates active discussion, necessitates objective thinking, and fosters constructive suggestions. The program committee has provided for full play of these influences by striving for about an equal

number of speakers from each of our two organizations despite the fact that in membership the SAF outnumbers the CIF seven to one. We from Canada appreciate this generous treatment.

I should be remiss if I did not also express our thanks to the host SAF Section and to the local arrangements committee for the delightful hospitality and most interesting trips which have been provided for both our ladies and ourselves. We from CIF are mighty glad to be here and are greatly looking forward to our next few days with you. Thanks for having us.

❦❦❦

Forestry — Between Past and Future

Harry S. Mosebrook

OUR meeting this year comes at a time characterized by as great a mixture of emotions and uneasiness as we have experienced at any time in our history. On the one hand we are grateful that we are living in these beautiful and blessed countries of Canada and the United States. On the other hand there hangs over all of our heads great uncertainty about the future as we view the struggle of the free world against the most powerful tyranny that has ever infested this planet.

Canada—U. S.: Partners in Same Boat

We are inevitably caught up in this maelstrom of ideologies struggling for domination in the world today, and whether we acknowledge it or not, the fight for survival of our way of life will overshadow every consideration we will make at this meeting.

One of our greatest blessings is the simple fact that Canada and the United States are just about the best neighbors you will find anywhere. We think the same way, and when differences do arise, as they are bound to between the best of friends, we have always discussed them together and resolved them amicably as friends.

The most significant fact about our relationship is that we are both free enterprise countries. We both have the same faith in the resourcefulness of the individual and we both cherish our freedoms.

A simple story, centuries old, illustrates this situation very well. Two men embarked in a boat. When out in the middle of the lake, one of them brought out an auger and started to bore a hole in the boat beneath his boat seat.

"Stop," cried his partner, "the boat will sink."

"Shut-up," replied the borer, "the hole will be under my seat."

"Yes," said his companion, "but we are in the same boat."

Canada and the United States are in the same boat of freedom.

As foresters from two great countries, we are bound together not alone by ties of our profession, but also by the fact that our common forestry problems must be dealt with mutually. There is no doubt that foresters recognize that underlying economic forces are working powerfully in the direction of greater economic interdependence within North America. The trend toward an enormous increase of trade in industrial materials of all kinds and vast capital flows to develop new resources which has been so evident the past few decades will increase further.

We both need imports from each other. A Canadian-American Committee of the National Planning Association of the United States and the Private Planning Association of Canada recently reviewed the future of industrial raw materials in North America. This study concludes that the large flow of forest products from Canada to the United States will continue to increase, and the total value of Canadian forest product exports to this country will be very much greater by 1980.

Peaceful competition, to paraphrase Khrushchev, characterizes our trade relations. Cooperation is the key to our joint battle against forest pests and fires and in the exchange of scientific findings.

One big challenge for the foresters of our two countries is to assure that together we can sustain a wood products economy for our growing needs at home and to make sure that we will never need to depend upon forest products from across a major ocean in the event of an all-out war.

It is significant that our two professional societies are holding joint meetings this year as a recognition of our mutual interests. However, because my own practical forestry experience has been restricted to this country, and recognizing the slightly different roles played by our two governments in forest land practices and ownership, my remarks now are applicable only to the United States.

Forestry's Point in History

This is a good time for us to take stock of how far we have come and some idea of the major obstacles that lie ahead. Forestry is needed between the past and the future at this point. I am reminded of what Daniel Webster said in the U. S. Senate on January 19, 1803:

> Mr. President: When the mariner has tossed for many days in thick weather, and on an unknown sea, he naturally avails himself of the first pause in the storm, the earliest glance of the sun, to take his latitude, and ascertain how far the elements have driven him from his course. Let us imitate this procedure, and before we float further on the waves of this debate, refer to the point from which we are departed, that we may at least be able to conjecture where we now are.

Our Society is 61 years old. We have progressed a long way from our early forestry efforts, which Stewart Holdbrook describes as:

> . . . the misty abstraction of a few

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well meaning people, generally believed to be harmless fanatics. Forestry had no connection with logging. Logging was industry. Forestry was a philosophy. They had never met. There was no reason to believe they were ever to meet.

Practical forestry did not come ready-made out of a vacuum. Until man could put the forest to some use, it was merely the woods, the wilderness, the very enemy of settlement and agriculture. It was to be cut down as rapidly as possible, or even set on fire and burned. It mattered little how, just so long as the land was cleared. Forestry? The pioneer with the ax, that revered figure of American expansion, could not possibly have had any incentive other than to make a clearing. He knew exactly what the enemy was, and he attacked with a gusto what seems in restrospect, to have been as savage as it was dedicated.

Forestry, or the management of wood areas, had to wait until the value of land, and specifically the value of timber on the stump, had enormously increased. Even then, and for a long time to come, the practice of forestry was virtually prohibited until radical changes were made in the archaic, idiotic, and confiscatory tax structures that had bedeviled American timberlands almost from the first. The tax raising methods of the several states seemed devised to impose a penalty on letting the virgin forest stand and to pay a premium for its rapid cutting.

From here on it was largely a question of economics; and forest management proved its worth. Prudence dictated that some of the profit dollars derived from the forest be spent, which is to say, reinvested, first for protection, then to develop techniques suited for managing the woods on a long-range, sustained yield basis. It is possible that this sequence of events made more believers within the industry than did anything else.

Cooperative effort put us where we are today. The Timber Resource Review showed us how far we had progressed from a point of no progress at all. But what has happened in our forests since then?

Forest Improvement Continuing

Since 1952, detailed surveys have been completed in 20 states and are generally conceded to be more accurate than the TRR. These resurveys provide unmistakable evidence that the trends in improvement of our forest conditions pointed up in the TRR are continuing. In some states the trend is not so favorable, but over-all improvement is shown.

The more important of these trends show that the volume of growing stock, all species, is up 6.3 percent; the volume of softwood growing stock is up 14.0 percent; the volume of sawtimber, all species, is up 6.3 percent; and the volume of softwood sawtimber is up 8.6 percent.

In the all-important growth-cut relations, slight improvement is indicated. State by state, there were increases in net annual growth, but there were also some states that declined slightly.

Besides the greater accuracy of these data, what accounts for this improvement? Certainly we are improving our protection techniques and knowledge; we are practicing better forestry today on private lands; intensification of management on government lands has been made possible by an enlightened public and government; and we are beginning to receive the payoff as a result of forestry measures that were made possible some years ago when it became profitable to manage forest lands for tree farming and sustained yield production.

The forestry situation today then is neither so good as to warrant any complacency whatever as far as what is going to be required to keep up with our growing demands for wood, nor so desperate that the situation necessitates embarking on new and untried crash programs that throw overboard all the principles of sound economics which have accounted for most of our progress to date.

Methods of Projecting Future Wood Requirements Need Study

It is past time, too, when we need more realistic methods of projecting our future wood requirements. As our vice president, Henry Malsberger, pointed out recently in the JOURNAL OF FORESTRY, how is it possible that such a difference exists in projections made by different sources, and how do we explain this to the public?

I agree with him that our Society should initiate a project without delay which could result in the formulation of standard procedure to obtain some universally acceptable projections of future wood requirements. The hazard of projections made without such a standard is not that they may be wrong, but that they may be accepted literally —that an illusion of knowledge will take the place of keen awareness of ignorance. They usually do have profound effect on government policy and the poor public is in the role of not knowing which forecast to believe.

Many of the projections being offered today are just about as ridiculous as the one made by the land planners of the early 1900's. They said there would not be enough agricultural land on which to grow the oats and hay needed to feed the dray horses required in the 1960's to deliver the goods to our huge population of that year.

Predictions of timber famines, which recur at regular intervals, usually fail to recognize the resourcefulness of man in fully utilizing what he has at hand. The "fear" or "scare" element should be eliminated from our programs. We have to expect that new knowledge and techniques of utilization will afford us opportunities of making better and more efficient use of our resources.

A New Concept of Action

Building on our past accomplishments, where do we as a professional Society direct our efforts today so that we, too, may leave our mark on the steady progress of our profession? I think a new concept of action is required.

Dr. McArdle expressed this so clearly:

> Concepts of forestry by foresters urgently need to be boardened. Failure to do so will continue to exclude foresters from many of the policy decisions of today that affect the use of forest land for the tomorrows. Now, as in the past, I firmly believe that most such policy decisions are made not by foresters, but by legislators, executives, financiers, engineers and men of other disciplines and orientation. If ever there is a challenge to foresters, it is to escape from narrow technocracy and to engage actively in the practice of political science and business management.

Dr. McArdle is right. We foresters have not been concerned

enough with the social and political implications of our activities. The laws under which we must operate, whether we be managers of public or private lands, are the results of politics. If we shun the art of politics as something alien and foreign to the practice of our scientific knowledge, believe me, other groups will fill the void. Labor, preservationists, and other special interest groups in many cases have exercised more influence in the development of national forestry policies than have professional foresters.

Examine, if you will, the party platforms of the major political parties to see the interest that politicians have had in national forestry policy since the first platform was published in 1872. Granted that party platforms are unsatisfactory in many respects, they still reflect political trends and they foreshadow issues that become significant in the campaign or on the social or economic scene—in future years.

This brings us directly to the question of what we can do. This, of course, falls into two categories: those things which the organized Society as a whole can do, and those things which we as individuals can do to accept the responsibilities as well as the privileges of citizenship.

Action by the Society

First, what our Society can do. An examination of the national meetings held by the Society some years ago shows more interest in subjects of national issue of the day. This resulted in referendums, the most notable one being the poll taken in the 1920's and again in 1950 when members of the Society expressed a strong dislike for federal regulation. We have had few referendums in recent years and the bulk of our meetings has been devoted to discussion of technical problems.

We will have a referendum vote on wilderness soon, but at the rate that wilderness legislation is moving through this Congress it may well be only an accessory *after* the fact. It is a very sad commentary indeed on our profession and Society that only the Puget Sound Section spoke up on this vital issue in all the years in which hearings were held, not only in Washington, D. C., but most areas of the West.

Fortunately the Society seems to be awakening at last to a keener sense of professional responsibility regarding policy issues of professional importance. Recently our Council has voted to authorize a Committee on Policy to determine policy issues and to get action in the name of the Society. These issues deemed of national importance will be discussed first in the Sections, and when action is called for, can be obtained by one of three means: (1) prompt Council vote; (2) Council vote following an opinion poll of the Sections; or (3) by a membership referendum.

This represents a big step forward and if activated and carried out with vigor and enthusiasm of our profession will afford us many opportunities for influencing the shaping of national, state, and local forestry policies so that the public may look to us for forest policy leadership. This will weld us into a stronger professional Society than we have ever had.

Action by Individuals

As individuals our responsibility is even clearer. Khrushchev in his report to the Central Committee on February 14, 1956, said, "A communist has no right to be a mere onlooker." While we deplore the methods used in Russia to insure the participation of its citizens in rubber-stamping the policies of the Kremlin group, nevertheless Khrushchev had put his finger on one of our weaknesses. No one can compel us to be active, but Oliver Wendell Holmes, Jr., in 1884 exhorted his fellow Americans to find their causes and serve them with enthusiasm when he said: "As life is action and passion, it is required of a man that he should share the passion and action of his time, at the peril of being judged not to have lived."

Politics is a most important function of our lives today. There should be no one of us too important or too busy to hold himself above politics if he values our American traditions. And remember, politics begins at home. If it is unsound here, it will be unsound nationally. If we are to effectively advance our own concept of conservation or wise use of our resources, we must become active in politics ourselves and we must be sure our story is told and understood by those who influence and those who practice politics. Our professional reputation is at stake in many political decisions.

What are some of the national issues of this day in the United States that are even now shaping the course of action that professional foresters will have to follow for many years to come? In my opinion they are:

Sharing Forestry Technology With Other Countries

First is our responsibility to share our forestry technology with other countries, and particularly with the newly developing group of nations. We will be more and more affected by what goes on in the rest of the world. Forest managers alone cannot control or prevent a catastrophic war, but we can help in solving the problems of hunger, ill-health, and shelter where they exist. With this, I think, none of us can quarrel.

Nor can we argue that our foreign aid program has not been costly. Since the Bretton Woods Conference in 1944, foreign aid to date has cost United States taxpayers $84.1 billion and has gone to practically every nation in the world including Soviet Russia and some of the Russian satellites.

Foreign aid expenditures on forestry programs alone have cost us some $10,212,394 from 1955 to 1959, and have provided forestry technical assistance in all areas of the world. Recently forestry trained personnel are being selected for the Peace Corps.

It is impossible for a private citizen to evaluate precisely what our entire foreign aid program has accomplished. We might conclude from unofficial sources such as *A Nation of Sheep* by William Lederer that the administration of this program has not been such that it has made its maximum contribution to the welfare and security of the free world. I have talked personally with foresters who have

worked in foreign countries, and many of them also report that our forestry technical assistance program is not accomplishing its full mission of sharing our technical knowledge with these countries.

I think our profession has a responsibility in this matter inasmuch as our reputation is at stake. It is my recommendation that the Society's Council consider reviewing our forestry technical assistance program to other nations with a view to determining how this program could make its maximum contribution to the betterment of other peoples. We have many foresters in our Society well qualified to accomplish this task.

Multiple Use Must be Sold to the Public

Second, is the undeniable fact that foresters must face up to the fact of meeting future demands for wood in spite of loss of commercial forest land for such uses as highways, urban sprawl, parks, water reservoirs, and the like, as well as to a multitude of restricted dedication demands such as wilderness and recreation.

Our land use conflicts arise from the many people whose simple solution to satisfying their needs is to set aside enough land for the particular use in which they are interested. Some of these groups want too much at the expense of other products and services needed in our expanding economy. This is true of many wilderness groups and national parks enthusiasts, although no one could argue that we do not need both. Right now wilderness interests are pressing for wilderness legislation which can permanently set aside some 65 million acres, 32 percent of it commercial forest land.

The Secretary of Interior has announced his plans to about double the present size of the national park system. This will mean an increase of about 22 million acres. Undoubtedly, some new national park areas may be needed, but we ought to be concerned that about half of this new area of restricted use is presently in national forest status where it is already providing recreation and other services and products in multiple-use management. The remainder will, of course, be obtained from state and privately owned lands, much of it in timber production.

The National Park Service, for example, has recently announced its plans for an Allagash National Recreation Area in Maine, comprising some 300,000 acres of privately owned commercial timberland. This area has been cut for timber production for over 100 years, but has still maintained its essential wilderness quality.

Where have we failed in selling the concept of multiple use as the one common sense way of fulfilling all necessary needs for forest land?

I think we have failed in obtaining public confidence in our skill to manage forest lands in the public interest. President Connaughton puts in this way: "However, irrespective of the use applied, the manager must show that his objectives fulfill a sound need and that they result in continuous productivity. Otherwise, dedications will be demanded and, whether we like it or not, someone else will be establishing the management objectives of the land for which we are responsible."

We have done a reasonably good job of making the public conscious of the need for conservation. But, have we succeeded in giving them an understanding of what conservation is? Does the public think that preservation of trees and parks and wilderness areas is the only true practice of conservation? We have taught children to cherish the gentle deer, but we have not told them that Bambi also eats seedlings. We have not given the public a balanced view of the physical, economical, and institutional bases of conservation. We have not made use of all modern methods of communication. Business enterprises, for example, have not made full use of advertising nor of factual and intelligent analyses and reports of their needs with respect to forest resources.

Our greatest professional contribution to this problem will be to advance the productivity of our forest lands and to manage them intelligently for their maximum benefits for all. Our next greatest contribution will be not to hide behind this facade of technical accomplishment, but to do all the things that are necessary to shape and mold public opinion in our support.

Small Forest Owners Require Further Motivation and Economic Studies

The *third* national issue relates to small woodland owners. This has been a much publicized issue since the TRR pointed up the fact that these owners are not doing as good a job of forest management as other classes of forest owners and must be brought under more productive management if future demands for wood products are to be met. It led to a series of small woodland conferences conducted nationally by the Forest Service which are expected to culminate in a new crash program of aids to be announced by the Service sometime this fall. A preview of this program was obtained last fall in a paper delivered to the Association of Consulting Foresters meeting in conjunction with the annual meeting of the Society. This report indicated a multimillion dollar crash program of technical assistance and subsidies for small owners.

To put this matter into sharper focus, it would appear that we may be about to embark on an ambitious social program without knowing all of our facts about the source of the problem. We need much more information and studied evaluation as to what motivates these small owners. The Federal Extension Service of the USDA recently listed the studies already made in this area. This listing shows that studies to date embrace such widely scattered samplings covering a relatively small geographical area as to make their findings inconclusive as a basis for launching a subsidy program of such magnitude. In fact, one study made in Alabama by the extension forester indicates that while forest farmers in that state showed a preference for individual visits by foresters, and increased educational efforts, almost none wanted bigger subsidy payments for forestry practices.

If the small forest owner is not

confused at this point, he ought to be. It is to him that the great bulk of federal, state, and industrial assistance is directed. He is already the recipient of large subsidies. Some 15 programs and 9 agencies in the Department of Agriculture alone are directed at helping him, in addition to the programs of the Tennessee Valley Authority and various state agencies. Many are duplicating and could be eliminated. Recently the Secretary of Interior announced the concern of that Department for the welfare of small woodland owners.

This is a case where professional foresters should team up with sociologists, economists, and other specialists to determine specifically what will help small owners. I speak only as one forester who is convinced that an equal emphasis on developing favorable markets, and making it profitable to manage small tracts of timber will do far more than subsidies to make our small woodlands more productive. Subsidies in many cases would only serve to perpetuate uneconomic units for dependable wood production.

The essential role of the federal government should remain that of extension and teaching. Government controls over agricultural production have only produced a "farm problem." Free enterprise in small forest farming may also be endangered if subsidies are applied with the inevitable controls over those subsidized.

Forestry at the Crossroads

This brings me directly to the *fourth* and last national issue which, I think, demands our professional attention today. At the beginning of my paper I stated that the struggle against communist tyranny was so important it would overshadow every other subject of consideration at this meeting. The communist ideology can never tolerate the free enterprise system, which has long since proved that it alone is the best system to meet this challenge and give man something worthwhile for which to live. It alone gives the individual the opportunity to create, to produce, and to achieve for himself according to his individual talents.

We Americans have two choices before us today in meeting the regimented economy of the Soviet Union. This choice is whether we are willing to rely upon voluntary action and free economy, or whether we believe that the only way to meet the communist challenge is to adopt the regimented governmental philosophy of the Soviet dictatorship.

I submit that this is an important consideration for professional foresters to consider seriously because forestry, too, seems moving in the direction of more federal domination and control. We have been witnessing the gradual erosion of the opportunities of most local and state agencies, including our state forestry departments, to make decisions based on local needs and responsive to local people. More and more legislation passed by the Congress restricts decision and policymaking to the federal government. The Department of Agriculture alone, according to testimony before a congressional committee, now has responsibility for programs which affect almost 70 percent of the total area of the United States, and for almost 80 percent of the area in the contiguous 48 states.

Conclusion

And now a closing word to all members of our respected profession. It is important that this meeting explore fully every aspect of the common frontiers of forestry between Canada and the United States so that we may make a major contribution to creating a better understanding of the opportunities and problems that stretch ahead of us. It is up to us to extend our own professional forestry competence to all areas of the free world when we can contribute thereby to our mutual security. It is equally essential that we maintain at home national attitudes and policies which will make possible the practice of more intensive forms of forest management.

I have great faith in our ability to form new policies of true leadership which will be worthy of the history of our profession and committed to the preservation of the democratic way of life.

The time is now and the choice is ours.

Forestry Perspectives

J. W. B. Sisam

IT is indeed an honor to be asked to address the opening session of this the second joint annual meeting of our two societies. I may say that I have had some concern since accepting this assignment, for there are obvious dangers in being responsible for the second of two successive keynote addresses—dangers of striking a wrong note, of being sadly out of tune, or, in another direction, of being simply an echo answering. Whether I am successful in avoiding these pitfalls will soon be apparent.

While it is recognized that the theme of a meeting such as this is intended primarily as a focal point for the immediate discussions, in the present case there seems some justification in viewing it as something of more lasting significance—a focal point for future action. Certainly, in this complex and competitive world, it must be greatly to the advantage of countries that share the same basic philosophy to develop a close association and identity of interests at every possible level.

The value of an objective approach to our subject is suggested in the words of the President of the United States when, in addressing the Canadian Parliament earlier this year on our community of interests, though in another context, he said, "We do not seek unanimity that comes to those who water down all issues to the lowest common denominator . . . or to those who measure unity by standards of popularity and affection instead of trust and respect." I am sure you would all agree that to be meaningful a "common frontier" of action must be developed on the basis of ideals that are interpreted realistically.

Undoubtedly our two countries have many things in common, and perhaps that which comes immediately to mind is the fact that we share the benefits and responsibilities of a great heritage—the natural resources of the major portion of this continent. But beyond that, our peoples share an identity of basic aims and are in mutual agreement on a number of fundamental principles: the fact that we are good friends despite our being neighbors has been cited as the exception to a general rule in international relations. And, whether in support of this happy situation or not, there is undoubtedly taking place a steady integration of the North American Continent: waterways and energy, primary products and processing facilities, and capital investment for economic progress, as well as defense arrangements for mutual security, are often of continental as much as national significance.

But it must also be recognized that we have many differences—not only those of relative populations and degrees of industrialization, but, perhaps more significantly, in matters of procedure and interpretation; and one of the more obvious values of maintaining our two separate entities and authorities is the opportunity this provides, as on the present occasion, of looking at our mutual problems and responsibilities from two points of view, of finding out to what extent we complement one another, and in these and other ways attempting to develop a North American perspective. In this sense our common boundary, that undefended border about which so much has been said and written, and which is no doubt the envy of less secure nations, serves a useful purpose; without it life might be less complex, but it would also be less interesting.

Recently President Stratton of the Massachusetts Institute of Technology was quoted in the JOURNAL OF FORESTRY as saying that "Science and engineering no longer can be taken in isolation from the rest of the problems of our society—they are woven in the whole fabric of our industry, economy, and federal life." This must certainly be true of forestry and other forms of resource management which all too frequently are looked upon as something apart from the other factors of production and other aspects of government policy, even to the extent that for the layman forestry may appear as a unique and unexplained phenomenon—as something quite out of his world. But the basic importance of our resources, the many facets of life they touch upon, and the increasing complexity of their management make it imperative that they and the way in which we deal with them be recognized as an integral part of the social, economic, and political pattern as it is evolving in North America. Here lies a responsibility that should be recognized and accepted by the forestry profession; and in preparation therefor, it is important to establish forestry in proper perspective with the principles on which our society is based, and at the same time to recognize that this society is dynamic and subject to constant, and we hope progressive, change. It is to these matters that I should like to direct some of my remarks this morning.

In the first place, our two countries are strong supporters of the democratic principle: it has rightly been said that "nowhere else in the world is there so great a continuous stretch of territory or so large a population which has been so long and firmly devoted to the practice of freedom." We would agree, I am sure, that democracy to be successful, or in fact to survive at all, requires that the internal life of our society be healthy and growing and to this end that we understand as clearly as possible the democratic processes involved and their application in any major undertaking. Public education is generally considered as the key to both understanding and participation, and the broader the education the greater is the chance that the democratic form of government will succeed.

In the report of the Fifth World Forestry Congress, it is noted

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"that advancement of forestry depends on broad public understanding and support." In commenting at the Congress on factors unfavorable to forestry progress over the past decade, Dr. Egon Glesinger, director of the Forestry and Forest Products Division of FAO, cited as a main reason the fact "that governments, legislators, and administrators still fail to appreciate fully the importance of forest development and conservation." These remarks were not, of course, directed especially to North American countries—perhaps quite the contrary. Nevertheless, in view of our basic philosophy of government, we in the United States and Canada have a definite responsibility to insure that the public, and particularly those in positions of authority, are informed, not only of the needs and methods of resource management and conservation, but even more important of the principles involved and the implications associated therewith.

I have seen it suggested that the public education phase of North American forestry is so well advanced that relatively less time and effort need be devoted to it in comparison, for example, to the development of methods and techniques; this may be true for some areas and certain aspects of public education. However, from my own experience and in support of what I have said earlier, it seems doubtful if any great proportion of laymen clearly understand the bases on which forest land use and management policies are being developed, and with the increasing pressures on such land for a variety of uses, both within and outside the jurisdiction of foresters, it becomes ever more important that the public be made aware, in terms of personal interest at least, of the implications of these pressures and of the different kinds and intensities of forest-land use that are being required and advocated.

Referring again to the report of the World Forestry Congress of last year, it was recommended to the less advanced countries that they seek out and adopt the successful methods of public education developed elsewhere. This seems to emphasize further our special responsibility if we are concerned that the management of our resources be recognized as an integral part of the democratic process.

Perhaps the point of greatest similarity between the United States and Canada is that they are both federal states, though with a somewhat different distribution of authority and responsibility between the central and member-state governments. Brought into being in the first instance as rather loose associations to meet the problems of the day, they have each developed rapidly, especially during the past fifteen to twenty years, toward a cooperative type of federation—in other words, governments at various levels are increasingly sharing "a divided responsibility for regulating a single economic and social structure." Among the factors bringing this about have been, first, the increasing demand for, and cost of public services; second, and as a corollary of that, greatly improved transportation and communication within the free trade area that each federation provides; and third, the uneven distribution of natural wealth and opportunity for industrial development in each federation.

In the United States forestry was one of the first areas in which the principle of cooperation between various levels of government and between government and the private owner was introduced and promoted legislatively; the patterns established first by the Weeks Act and later the Clarke-McNary Act, the Norris-Doxey Act, and its successor the Cooperative Forest Management Act, have, I believe, been cited as guides in planning federal cooperation with other agencies.

In Canada the pattern has developed somewhat differently, as under the Act of Confederation the provincial authorities were given full jurisdiction over the public forest lands within their respective boundaries. However, in recognition of the importance of forestry to the country as a whole and also of the great variability of problems and conditions from province to province, an important step toward intergovernment cooperation was taken with the passing of the Canada Forestry Act in 1949. This has been followed within the past year by the establishment of a federal Department of Forestry, signalizing among other things an intensification of cooperative programs.

Thus our two countries are going through the same evolutionary process in federal administration, though along somewhat different lines, and in each case forestry, because of its over-all importance and many ramifications serves in a sense as a prototype. The differences in approach and procedure in the two countries may in some degree be complementary and provide the background for a "common frontier" of cooperative effort.

Undoubtedly cooperative federalism and all it implies in a willingness on the part of authorities at different levels to work together will become increasingly significant both at home and abroad. Many of the newly emerging countries in the relatively underdeveloped parts of the world are beginning life as federations in the classical sense, and their ultimate success will surely depend on the speed and degree with which their member states can establish a common approach to their more pressing problems.

Perhaps the hallmark of our society as much as anything is the economic philosophy with which our history is so intimately involved. In both Canada and the United States, we are in general agreement as to the place and value of private enterprise in promoting industrial development and a high standard of living. Traditional capitalism and its modern counterpart have played a dominant role in the growth and design of North America, and in this process the forests of the Continent have served both as a means of capital formation and as one of the more severe testing grounds for the relations between government and industry; undoubtedly in both countries there have been periods of tension between the forest entrepreneur and the public interest as represented by government. While these may not have completely

disappeared, marked changes have taken place, largely as a result of changing forest conditions, but also perhaps in relation to more general evolutionary trends typified by a move away from economic individualism toward what has been termed a mixed economy: this is represented on the one hand by governments that are many things to all men and on the other by large corporations, trade associations, and labor unions, all of which are of national and interrelated significance. Associated with this change and with the object perhaps of attaining a greater economic stability, there appears to be developing, in some areas at least, a closer identity of interests and responsibilities between government and industry. In this connection, it is of interest to note that at a meeting of the International Chamber of Commerce held in Copenhagen last spring, a point that was given special emphasis as a means of furthering the well-being of mankind (and with reference particularly to assistance for underdeveloped countries) was the closer cooperation of government and industry—a partnership it was suggested that would be the means of achieving optimum development.

In North American forestry, the relations between industry and government have been and are today strongly influenced by the pattern of land ownership. Thus in the United States there are, in addition to state land and small private holdings, extensive areas of productive forest land under two distinct forms of ownership and management policies, those of the federal government being aimed primarily at developing the forest to serve the public interest, while those of industry are concerned in the first place with ensuring a profitable operation. Under these conditions each authority would be expected to develop plans and practices best suited to the primary objective of management, these being modified in some degree within a multiple-use pattern as social and economic pressures increase: in this way, whether the two authorities cooperate directly or not, there should develop in time a considerable body of common or complementary experience, interest, and responsibility.

In Canada where the land/man ratio is much higher than in the United States, the demands involving multiple use of forest land are only gradually developing, though more rapidly in some regions than others; where these do occur, they must be dealt with in most cases on land exclusively under public ownership. At present much of this land is under license to industry and administered by government regulation for timber production, but increasingly there are indications of support from representatives of both government and industry for closer cooperation in management practices; this, if properly developed, might well result in greater efficiency of operation and at the same time confound the views of those who advocate that government should be both the administrator and operator of all natural resources. Growing demands for alternative or supplementary uses of forest land may complicate the situation and will require a careful evaluation and balancing between the needs of a healthy forest economy and those of the general public who in the process must, as I have suggested earlier, be fully informed of the implications of policies and practices developed on their behalf.

So much for the framework within which we live and must develop our "common frontiers." It may be felt that I have overstressed this approach, but ours is a dynamic society, and the relationship of forestry to the principles we support and the differences in these relationships as between the United States and Canada seem to me pertinent to our present theme and to our future progress.

Increasingly we hear the use of such expressions as "it's tomorrow that matters—not yesterday." As for today, it is presumed that as we are just passing through, we really haven't the time to be greatly concerned. In any case, the emphasis is on tomorrow, and in the time remaining I should like to say a few words about that unknown quantity, the future, for it is with this that the title of my paper "Forestry Perspectives" is more properly concerned; and if I understand the analogy correctly, the purposes of a "common frontier" are both as a means of consolidation and as a base from which to move outward in time as well as space.

Referring again to last year's World Forestry Congress, the question was asked by one of the main speakers, "Will forests still have an essential role to play in the world's further economic development?" While the answer, amply supported by statistics, appears to be clearly in the affirmative, the question itself may be used to illustrate an uncertainty as to the means of future economic growth and stability, whether national, hemispheric, or global. In both the United States and Canada in recent years, numerous surveys have been undertaken, committees and commissions appointed, and conferences organized with the aim, in part at least, of providing the information on which to base and project plans for the future. In Canada, the current effort in this direction is the "Resources for Tomorrow" conference to be convened three weeks hence. This conference is a further example of cooperative federalism at work, as it is being sponsored jointly by the central government and that of each of the provinces with a mandate "to probe, print, and palaver on existing shortcomings in present resources policies and programs." It may be added that the emphasis is not to be so much on resource development as on economic development and the relation of natural resources to that process.

In nearly all cases these surveys and discussions, in whatever country they may be undertaken, are trying to establish a national perspective, but in doing so will inevitably be concerned with matters of regional and international significance. An example, and one that I think is relevant here, is the study of markets as a means of gauging the future needs for goods and services based on natural resources.

Comparing our own two countries, the United States, with a relatively large population and

high degree of industrialization is a net importer of forest products, while Canada, with a low population density and extensive forest resources, is an exporter. Indeed, it must export to survive economically. In 1959 Canada marketed 20 percent of all wood pulp and 55 percent of all newsprint produced in noncommunist countries, and is ranked as the world's leading exporter of lumber, pulp, and paper.[1] In that year (1959) the value of its exports of forest products totalled $1.5 billion, and of this total the United States took 79 percent and the United Kingdom 11 percent. As a consequence, perhaps the most obvious "common frontier" in the minds of Canadians attending this meeting is that foresters in both countries are developing programs aimed at providing forest products to serve largely a single market—that of the United States. This may be an entirely sound procedure, though I don't think that it has been formally recognized as such; and the question is of special significance just now because, despite the postwar efforts toward multilateral trade arrangements, there is an increasing trend toward regionalization of world trade—a fact that must be of particular importance to those nations that depend heavily on export markets. It is natural, therefore, that Canada should be concerned at the present time with questions as to its future trade policy—a policy which inevitably involves the wood-using industries to a major extent. Should this policy concentrate on North America, seek European alignment, attempt to promote a wider Atlantic association, or depend on the possibility of favorable multilateral arrangements being established and maintained? Although such questions may be basically the concern of other disciplines, the answers can have an important bearing on Canadian forestry policies and programs in the future.

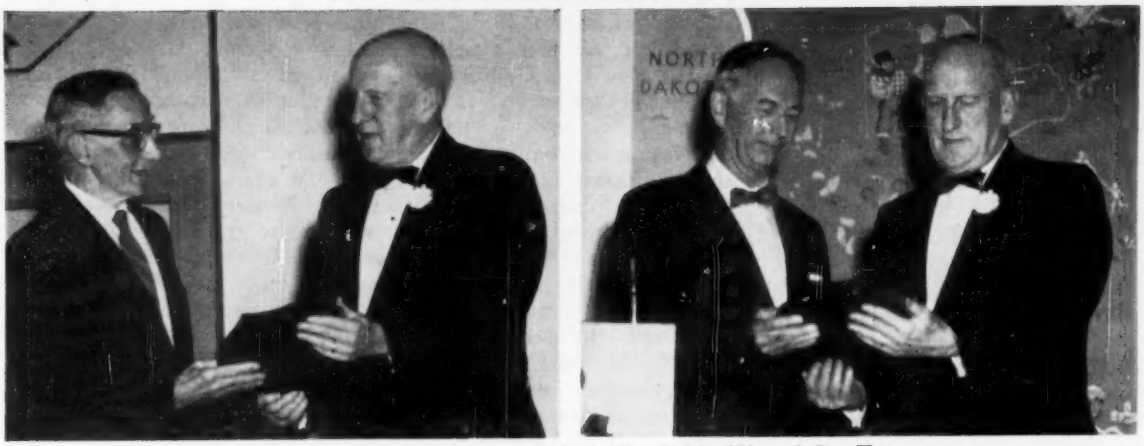
But over and above those problems within the pattern of our immediate economy are others that may be of even more far-reaching significance and must be considered in attempting to form a perspective, whether national or international: these are problems involved in what might be termed terrestrial planning (in contrast perhaps to spatial exploration) and are associated in our minds partly with the tremendous changes that are taking place as a result of technological development and partly with the expected increases in national and world populations (the latter estimated as growing from three to four billion over the next twenty years). The significance of these trends is amplified by the relatively low level of technology in some areas of high population and the increasing urbanization and more leisure time for people in industrialized countries. Both trends may have important and conflicting influences on forestry development: thus advances in technology, while improving the yield of forest land and expanding and diversifying the use of its products, may threaten the replacement of these products with synthetic substances or those produced from other raw materials; and growth in population, while undoubtedly increasing the demand for manufactured products, will also cause a shrinkage in the area of accessible land available for timber production and will require increasingly the use of forest land as an "amenity" resource.

Have we a perspective that permits us to deal effectively with the problems of today while at the same time preparing for the more complex situation of tomorrow? Undoubtedly the majority of foresters in Canada and the United States are of necessity concerned with the immediate tasks of harvesting, protecting, and managing the forest lands for which they are responsible, and their success in this will have a very important bearing on our future prosperity and well-being. It must be recognized, however, that as pressures on land increase and there develops a broadening concern for the relationship of people to natural resources, there will also be a breakdown of clear-cut divisions of responsibility and the interweaving of disciplines other than forestry in the pattern of resource management; this, of course, has been going on for some time, but increasingly the problems associated with the broad field of conservation will spread across the various specialized areas of study, across departments and committees of government, and across the borders of professional societies. If the forestry profession is to maintain a leading role in this situation, we must establish clearly in our own minds and in the minds of all responsible people the principles upon which our philosophy and practices are based and be prepared to fight for policies and programs we feel are necessary; at the same time we should understand the objectives and methods of those in other disciplines, who are interested in the field of natural resources, and be prepared to establish what in the parlance of this conference may be termed "common frontiers" of interest and action where this seems promising.

In conclusion, I would say, and I think this is in keeping with what has already been said, that if there is a keynote to be struck for the future, in matters both national and international, it should be a double note compounded of the two elements of education and cooperation: education to provide increasingly a background of knowledge and understanding that will be needed to deal with the problems of the future, and cooperation to furnish the framework for more effective action. H. G. Wells has spoken of history as "a race between education and catastrophe"; of this we are increasingly aware, and also of the fact that the race is getting closer all the time. Cooperation in the promotion of education at the international level may be one of the few really effective means of easing world tensions and thus influencing the outcome. Professor Heiberg has made the point well in a recent paper on this subject when he states, "For years many have realized the need for world cooperation and that our responsibility toward humanity is on a par with our responsibility to race, nation, or tribe. Today this need for cooperation is not only a means for making a better world to live in. It appears crystal clear that *understanding* and *cooperation* are necessary for our very existence."

[1]Wilson, D. A. Demand prospects for forest products. Resources for tomorrow. II:627-640. 1961.

SAF Honors Three



President Connaughton presents awards to Dr. Balch (*L*) and Dr. Kramer.

Presentation of Awards to
Reginald Ernest Balch
and
Paul Jackson Kramer
For Achievement in Research
by Charles A. Connaughton
President
Society of American Foresters
Minneapolis, Minnesota
October 11, 1961

It is my honor tonight to present the Society of American Foresters' Award of Achievement in Biological Research to two recipients.

Before I undertake this pleasant task it is well to point out the significance of this award, as well as the circumstances which made it possible.

In 1954 the Society of American Foresters received a grant of $10,000 from an anonymous donor. The purpose was to finance awards to be made by the Council "In recognition of outstanding achievement in basic or applied research in any branch of the biological sciences, provided the research contributes, either directly or indirectly, to the advancement of forestry."

I express the sincere appreciation of the Society to the anonymous friend whose generosity makes it possible for our profession to accord recognition to research workers who have contributed notably to the advancement of forestry, not only in America but in other lands as well. The Society has previously so honored Leo Isaac of Portland, Oregon, and Philip C. Wakeley of New Orleans, Louisiana, in 1956; Harold J. Lutz of New Haven, Connecticut, and C. Syrach Larsen of Denmark in 1957; Nicholas T. Mirov of Berkeley, California, in 1958; and Francis X. Schumacher of Durham, North Carolina, in 1959.

The awards which I am to present tonight consist, materially, of an engraved plaque and a cash honorarium of $200. Most of all, however, they represent the commendations of the profession of forestry.

It is especially appropriate at this combined meeting of Canadian and United States foresters that I announce the first presentation of this award of our Society to a Canadian. He is Dr. Reginald Ernest Balch.

Dr. Balch was from 1930 until last year Officer-in-Charge of the Forest Biology Laboratory, now of the Canada Department of Forestry, previously the Department of Agriculture, at Fredericton, New Brunswick. His relinquishment of administrative duties is currently allowing him to complete work on a special research study before his retirement.

Biological studies conducted by Dr. Balch during his many years of research have been broad in scope. His most outstanding contributions have been concerned with the European spruce sawfly and the balsam woolly aphid. His intensive studies on the biological control of the European spruce sawfly, an introduced insect that once threatened the spruce in eastern Canada, pointed up the importance of a virus disease in the control of this outbreak. The successful research that he instigated and directed in this field provided the impetus for the early establishment of a team of research workers in insect pathology in Canada. More recently, he has dealt with the principles of biological and chemical control as applied to forest insect pests in continental areas. He was the first to recognize and emphasize the need for chemical control action against the current spruce budworm outbreak in New Brunswick. Moreover, he has had a strong influence on the highly successful research program in forest entomology being carried out in the Maritime Region of Canada.

After graduation from the University of Toronto in 1923, Dr. Balch subsequently received his Master and Doctorate in entomology at New York State University, Syracuse, in 1928 and 1949, respectively. His career before joining the Forest Biology Laboratory included lecturer and dean of residence at the Ontario Agricultural College and forest insect investigations agent for the U. S. Department of Agriculture.

A prolific author of scientific papers, he has also been active in scientific and professional societies in the fields of entomology and forestry. He was president of the Society of Forest Engineers in 1949 and of the Canadian Institute of Forestry in 1950.

Dr. Balch, in behalf of the Society of American Foresters and of the anonymous donor who established the award, I have the honor of presenting to you this plaque and check in recognition of outstanding achievement in biological research leading to the advancement of forestry.

The second recipient of the award is Dr. Paul Jackson Kramer. Dr. Kramer was, during the past year, program director of Environmental Biology in the National Science Foundation, Washington, D. C., while on leave of absence as professor of botany at Duke University, Durham, North Carolina.

A 1926 graduate of Miami University, Oxford, Ohio, Dr. Kramer received his Master degree from Ohio State University in 1929 and his Ph.D. from the same institution in plant physiology in 1931. He has since that year been a teacher at Duke University, advancing through the academic ranks to full professorship.

Dr. Kramer is senior author (with T. T. Kozlowski) of *Physiology of Trees*, published in 1960 by McGraw-Hill Book Co., which has been acclaimed a publication milestone in woody plant physiology. He is also the author of the 1949 McGraw-Hill book *Plant and Soil Water Relationships* and of numerous scientific papers.

He was a member of the organizing board of the American Institute of Biological Sciences and its vice president 1957-1960. A 1956 recipient of the Certificate of Merit of the Botanical Society of America, he was that organization's vice president in 1959. He has been secretary-treasurer, vice president, and president of the American Association of Plant Physiologists. Long and closely related with forestry through research in the physiology of woody plants, inspired teaching, and in guidance of graduate students' research in tree physiology, Dr. Kramer has made major contributions to forest biology.

Dr. Kramer, in behalf of the Society of American Foresters and of the anonymous donor who established the award, I have the honor of presenting to you this plaque and this check in recognition of outstanding achievement in biological research leading to the advancement of forestry.

Presentation of

SAF Special Award to L. Audrey Warren

by George A. Garratt

During the six years I have served as an officer and member of the Council of SAF, I have had many rewarding associations, but none so rewarding as the privilege of working in various ways with the business manager of the Society. Accordingly, I am greatly honored to have the privilege of acting on behalf of the membership of SAF in honoring Audrey Warren on her retirement after a third of a century of devoted service to our organization.

When Miss Warren joined the staff as business manager in 1928, the Society had about 1,350 foresters on its roster (a membership exceeded today by two of our twenty-two Sections) and an operating budget of less than $14,000, of which it has been said that "Nothing more impressive than a small folding checkbook was needed to take care of disbursements." In the intervening thirty-three years, she has seen our ranks grow more than tenfold (to almost 14,000 members), and our budget increase almost fifteenfold, to today's $250,000 operation. Significantly, under her astute management and with her strong aversion for red ink, she has kept the Society's business operating distinctly in the black over this long span of years.

Dr. Garratt presents special SAF award to Miss Warren.

In recognition of Miss Warren's distinguished service, the Council at its meeting last spring voted to change her status in the Society from Associate Member to that of Honorary Member "for distinguished service to forestry in America."

In more of a "grass roots" expression of gratitude, some 350 members of the Society have joined in contributing to a retirement gift of a somewhat different character. This group comprises past and present officers, committee members, and others who have been associated with Miss Warren in one capacity or another over the years, as well as foresters and other friends who have recognized her service without the privilege of such association.

Many of the contributions to this gift were accompanied by notes, couched in various terms but all with a sincere expression of appreciation for Miss Warren's unstinted efforts on behalf of the Society. Of these notes, I have selected one as typifying the sentiment not only of the relatively small number of those who are joined in making this gift, but of the entire membership:

"I suppose there must have been many times during Miss Warren's early association with the Society when she wondered whether she should continue that association. At such times, she must have endured purely out of a sense of loyalty to the organization and a high regard for its members.

"We of the Society can be thankful that she did endure. We now have a rather robust organization, largely due to her good management.

"I am sure that all foresters with any knowledge of Miss Warren's contribution wish her many years of happy and fruitful retirement."

On behalf of the members who are making this gift, it is now my privilege to present Miss Warren with this check for $1,210 to be spent as she sees fit —in travel, for a new fur coat, or just paying the grocery bill.

By sheer coincidence, it happens that today is Audrey Warren's birthday. I know that everyone here joins me in wishing her many happy returns of the day, and many happy birthdays in the years ahead.

Introduction of Dinner Speaker at CIF-SAF Joint Meeting

G. W. I. Creighton

Toastmaster

LADIES AND GENTLEMEN:

As you know, our special speaker for this evening was to have been John H. Hinman, honorary chairman of the board and director of woodlands for International Paper Company, and a director of Canadian International Paper Company. We regret that Mr. Hinman is unable to be with us because of illness. His doctor has recommended that he forego this evening with us.

Fortunately, however, Mr. Hinman had worked for some weeks on the remarks he had planned to make here. As you will see, this is a highly personal talk drawn from his fifty years as a timber operator, woods manager, and finally as a senior executive of the most important forest products organization in the United States and Canada.

I am personally sorry not to have the opportunity to introduce Mr. Hinman. I have admired him as a tough-minded executive who has seen very clearly the challenge and promise of modern forestry. His concepts of forest management for sustained yield, his company's broad program of multiple use of their forest acres for the benefit of the public, his leadership in Canada and the United States of the fight against forest fires and the ravages of insects and disease, and his personal support and advocacy of the idea that trees can be grown as a crop, have all broadened the dimensions of modern forestry. Few men have achieved more in our field than John Hinman. I know he is sorry not to be with us tonight.

Mr. Hinman has asked one of his assistants to join us tonight and to read his speech in his behalf. We are delighted to have John L. Tower with us. Mr. Tower is a vice president of International Paper and a member of the company's Management Committee. He is in charge of the company's public relations, advertising and sales promotion programs.

I am delighted to introduce Mr. Tower, representing one of the great industrial leaders of our two countries.

The Forests of the Future

John H. Hinman

As your toastmaster has indicated I began to earn my living in the forests of New Hampshire a number of years ago. Eventually I rose through the woodlands divisions of the company to become president and then chairman of the board. Now I have been made director of woodlands, which seems to suggest that if I keep on progressing, I will be back cutting wood in the forests of New Hampshire one of these days.

Not many people get a second chance the way I have—once a woodsman, always a woodsman.

Of course, what I want to talk about is the forests—more specifically "the forests of the future" here in the United States and in Canada. For me, there is no more interesting subject.

And I would like to put forward and stress two basic notions—

First: Economics is the great forester. Economics has done more for forestry and foresters in the last fifty years than any other influence.

Second: The great challenge of the future—when there will be vastly increased populations and much larger demands on the forests of this continent—can best be met by a growing cooperation of private and public interests under stable, long-range policies of multiple use of our North American forest resources.

When I was a young man, Gifford Pinchot, one of the founders of the Society of American Foresters, was driving hard to stir up public interest in, and concern about the future of our forests.

I was aware of his ideas, but not much forestry had been practiced in my part of the country at that time—and for a very good reason. We couldn't afford it.

Someone was telling me not long ago he remembered seeing me in those days standing in an area which we had just finished clear-cutting. He said there was not a stick to be seen standing as far as the eye could see. I don't doubt it was true. We couldn't afford to leave any wood. We were working on very narrow margins. It was not a question of good forestry or bad forestry. It was a matter of cutting wood to suit the conditions and the economics of the time.

There is a legacy from those early days which I think is unfair. Gifford Pinchot was a very successful propagandist. For him everything was black or white. He did a job which had to be done. However, in the process of fighting for forestry, he created a lasting impression that all lumbermen were unprincipled and greedy. Many people today still carry that image in their minds.

The truth is that lumbermen cut and moved along because that was the nature of the lumber business at that time. When a mill acquired land, it was really the wood on the land they were buying. And when they harvested timber, they harvested all of it with little thought for the future—not because they were bad foresters or evil men, but because they would go broke if they didn't. I know. The year I got out of college my father died and I took over the family lumber business.

I remember the first job I ever had for I-P back in 1913. I was hired to manage their timberlands in northern New Hampshire and

Vermont and to deliver peeled wood on the cars at East Brighton, Vt. I was to be paid $2,000 a year. If I could land 10,000 cords of peeled wood at $5.50 a cord—on the cars—I was to get a bonus of $500. The great problem, you see, was to get low-cost wood.

I got the $500 bonus, by the way.

I don't want to argue that all lumbermen were saints. In fact, I never knew one of them that was a saint—not even close. But they were very far from villains. They were doing what they had to do to survive. They were producing low-cost lumber to build a nation. It may be worth recalling that when I was a boy in northern New Hampshire, the finest yellow birch and maple—the very best veneer logs—were cut up for stove wood. And in those days, it was a common thing to go into an area that had been logged years earlier and find the tops of great pine or spruce trees lying near stumps three or four feet in diameter. Only the first twenty feet of the tree—up to the first branch—had been taken for clear lumber and the rest left on the ground.

These were not considered wasteful practices in those days. It was economics.

If Gifford Pinchot was unfair to many of the early lumbermen—as a good many people might agree—he strongly believed some things which I can certainly endorse today. He once defined forestry as "the art of using the forest without destroying it." I would go further and say it is the art of using the forest while making it better. He continually stressed use. I think it is vital now—more vital than it was then—to stress the live, growing, useful forest. He was a conservationist, but not a preservationist.

What changed the outlook for the forests beginning during the 1920's and after was the development of a market for an annual wood crop. It began with the rise of the pulp and paper industry. This was an industry which could not cut and get out. With its vast fixed investment in mills and machines, it had to have wood available, year after year.

As I remember it, Colonel William B. Greeley predicted that the paper industry would be the first to practice forestry—and he was right.

The effect of economics as an influence on forestry is clear when we look at the forests of the U. S. South. What happened there as a result of economics happened in other parts of this country and in Canada as well. But I was looking at the southern figures only the other day and they are worth remembering. In 1935 there were 25 pulp and paper mills in the South, and they consumed about 2½ million cords of wood. The forests of the South had been cut out, turpentined out and burned out. The old growth had been liquidated. Good forest land was worth a few dollars an acre—or less.

Then the paper industry began to expand. It began to draw on these remaining southern forests for more and more wood. In so doing, it created a continuing market and raised the economic value of wood. By 1960 there were 82 mills, not 25, and annual consumption of wood was 23½ million cords, almost ten times the 2½ million cords of 1935. In 1935, the forest inventory of the South was estimated at 120 billion cubic feet. Between 1935 and 1960 the forest products industries consumed 147 billion cubic feet. Today, the forests of the South are believed to contain 131 billion cubic feet—in other words, 11 billion cubic feet more than they started with a quarter of a century ago. I consider this one of the greatest achievements in the history of American forestry.

I don't need to tell you, also, that the cutover southern forest lands of 1935 are now healthy, productive forests. Furthermore, they are filled with trained foresters. The paper industry, by raising the economic value of forests, created a new demand for trained foresters.

I think every forester should remember—and perhaps the two distinguished societies meeting here should proclaim every once in a while, as Austin Cary and Canada's Elwood Wilson did a great many years ago: good forest management is possible when it pays. This profession rests on an economic base. You foresters are all an expense—but you are a worthwhile expense because you are helping make it possible for the forests to produce fiber at a price wood users can afford.

There is a relationship between the number of foresters in this country today and the economies of wood-using industries.

I believe a company that depends upon wood as a raw material really needs two different kinds of thinking by the men running its wood operations. They should think in terms of the timber operator who must produce low-cost wood. And they must think in terms of the forester, who is concerned with how to grow more wood or better wood, more economically. The operator will see to it that we can support the forester today and the forester will see that there is a job for the operator tomorrow.

I don't need to tell you that the prophecies of timber famine which were common in the early days of Gifford Pinchot and later have not been fulfilled. The wood has been produced under the pressure of economic need. According to the Timber Resources Review of 1953 the United States has a favorable wood balance today. This is the first such report I recall that did not warn of impending disaster.

I am not trying to say that there has not been any change in the forests since I was a young man in the business of "letting daylight into the swamp," as they used to say. The day of the 3-foot pine plank is no more. The old growth has been cut out of the forests of the Northeast and in most other forested areas except for some areas in the Pacific Northwest. But the richness of the growth which has succeeded the old growth needs to be emphasized. The old trees are mostly gone but young, dynamic, healthier forests have taken their place.

Now let me make some comments on the future as I see it.

Most people today recognize that the forests of North America are one of our greatest economic assets. The tremendous social and economic changes under way in this country and in Canada will bring a great increase in the demand for

the products of our forest lands. Our forests must continue to fill our growing needs for wood products.

But the forests must meet other human needs beyond the production of timber. So the question is posed—how can our forests best serve the many varying needs of our expanding population while they continue to produce the timber crops our standard of living demands? As Dean Garratt of the Yale School of Forestry has warned us, "Today's forest acreage is all we have now and more than we shall have in the future."

It seems to me that multiple use is the way of the future. If both private and public interests adopt it, we can achieve the greatest good for the greatest number in terms of timber production, watershed protection, wildlife protection and recreation.

Ours is a vast continent—there has always been plenty of accessible land to fill all of our wants. Last spring I heard the dean of a major agricultural college estimate that our standard of living today demands the production of food, clothing and shelter from 2½ acres of productive land to support each one of us. We have that land available today both in the United States and in Canada.

But we know that in the United States alone over one million acres of forest and farm lands, often the most productive lands, are eliminated annually by road, highway and airport construction, by creation of new reservoirs, by power and pipeline construction, by government and industrial construction and by community growth. We also know that the day is not too far distant when our population will number 300 millions—each presumably needing his 2½ acres. There is a point on the curve—a day in the future—when the two lines will meet. That day is the day we must begin planning for at once.

It seems quite clear to me that if all of our public and private purposes are to be served and our needs for food, fiber, forest products, water and recreation are to be met, there must be wise, long-range planning, not just for today but for the long pull. I think that all of us as land managers can expect the greatest increase in public demand for forest-derived services to come in the field of outdoor recreation. The pressure is heavy and growing every day. We must find a way to effect a balance.

One trend that has concerned me recently has been the tendency in some quarters to long for the unspoiled wilderness of our forefathers. Some even go so far as to advocate that vast additional areas of productive forest land be removed from production of timber and most other public uses to be set aside as wilderness reserves. It seems to me that this single-use concept of land management runs contrary to all the hard-learned lessons of the years since Austin Cary and Gifford Pinchot. Further, this concept serves the purposes of the privileged few and at the expense of the broad public.

A wilderness cannot support good forest management. In fact, it is against forest management. It is a return to the old days of neglect and waste rather than a step forward. Those who are benefited by the wilderness are not the public, not the average family seeking a holiday spot they can drive to. Instead the wilderness theory benefits the handful of people who have the leisure time, the energy, skill and inclination to go by canoe, pack-horse or on foot into wild, roadless country. The wilderness has no campsites, no boat launching ramps, no tap water, toilets or other amenities for the public, no fire towers or fire fighting roads. And may I remind you that among the things you will not find in a wilderness are foresters.

We have a good example of the conflicts involved in the sentimental search for a bygone day in the proposal that has been made to designate a vast area in the Allagash River region of Maine as a wilderness—the benefits of multiple use and the folly of a single purpose management are clearly evidenced in this proposal.

The forest products industries in the State of Maine employ over one-third of the working population with payrolls in excess of $125 million a year. The value of the annual timber harvest is $500 million. The commercial timberlands of the state produce over $5 million annually in property taxes.

These commercial forests, including the Allagash, have been cut and cut again for over a century. Today they are well stocked and productive, filled with game and provide an ideal area for recreation.

On the Allagash the timber owners have a policy of preserving the natural wild beauty of the lands bordering on the lakes and waterways. As a result, the area has maintained its wilderness aspect. As you know, every year several hundred youngsters still enjoy the unique experience of white water canoeing down the Allagash under rugged conditions that have not changed in the last one hundred years.

This is "multiple use." It means recreation for those who want to go into the woods; an economic and tax return for the people of Maine; raw materials for saw mills and pulp and paper companies; jobs in the woods and mills; a habitat for wildlife; and perpetual yield of timber crops from these managed forest lands.

I have seen the wonderful photographs put out by those who propose to make the Allagash a wilderness area. I cannot imagine a more attractive prospectus. I can testify they certainly show the attractions of the region as it is now, since I traveled through the area just a few weeks ago. But this result was achieved by private ownership under a program of multiple use over a period of a century of cutting. This is a testimonial to the present policy of multiple use under private ownership.

The wilderness concept about which we hear so much today is essentially a "single use" concept. It destroys the economic base on which good forestry rests.

Opposed to this limited use concept, this policy of neglect, we can pursue the far more promising policy of multiple use. Multiple use has been tried in both the United States and Canada. Most informed and thoughtful people, who are concerned with the long-

range contributions the forests can make to the economic, social and spiritual lives of our nations, support this approach to the question of forest land use.

In the United States, multiple use has been adopted as national policy by the Congress in 1960 by approval of the 1959 National Forest Program drawn up by the Forest Service under the leadership of Dr. McArdle. Just last month President Kennedy sent to Congress an expanded Development Program for the National Forests which calls in part for substantially broadened and intensified recreation resource management on national forest lands and acceleration of timber harvesting and management programs.

This new program, of course, will be studied and reviewed. But from what I have heard, it appears to support the broad policy of multiple use of the nation's forests which has been advocated by Dr. McArdle and which so many of us think promises the maximum development of the forest's great potential contribution to our people.

In Canada, outdoor activities such as hunting, fishing and camping are almost a way of life. The provincial governments bear the responsibility under the British North America Act for establishing policies of multiple use in varying degrees from coast to coast. For instance, in Quebec Province, where Canadian International Paper has extensive operations, the government has set aside vast areas as public parks where hunting, fishing and camping are regulated and supervised by governmental agencies side by side with management and harvesting operations.

There, too, I would assume that existing policies must be reviewed from time to time so that a proper balance is maintained between the primary industrial users of the forest and the public at large. The problem there, like ours in the United States, is becoming more acute as the road network is extended, as more people drive cars and more of them discover the pleasures of outdoor living. In Mont Tremblant Park alone, some 80 miles north of Montreal, as many as 60,000 cars are registered in and out over a season.

Where people are traveling over company-built and maintained roads in these Crown forests, the companies have cooperated with the park authorities in regulating this travel and guarding against fires.

These programs can, of course, be developed and implemented at many different levels. In New York State we have an example of a fine approach to the full recreational development of the state's private lands in the Fish and Wildlife Management Act. This Act provides for cooperative agreements between the state and private landowners. Under these agreements owners continue to manage land for timber harvests or other private purposes, at the same time making provision, with the cooperation of state agencies, for full development of recreational resources.

Our company entered into such an agreement involving some 30,000 acres on our Speculator Tree Farm. We have agreed to keep the area open to the public for hunting and fishing and we maintain roads and parking lots. The state supervises hunter safety, maintains check stations and protective patrols and provides nearby campsites. Our first experimental year of operation was considered successful by us and by the State Department of Conservation.

Perhaps similar programs are being carried on or are under study in other states. I think they hold a great deal of promise. I am also very much interested in the measured look at our nation's outdoor recreation resources that is being taken by the distinguished commission headed by Laurance Rockefeller. We can expect their report to be thoughtful, taking full account of the economic and social implications involved in arriving at a program for full integration of the multiple uses of the nation's outdoor resources for the benefit of all citizens.

Another indication that people from all over the nation are concerned and thinking about this question was provided by the recent National Forest Land Use Conference, sponsored during September by the American Forest Products Industries. Papers covering a wide range of opinion were presented by three distinguished panels. The areas of mutual concern and agreement turned out to be very broad indeed. I am sure this meeting helped to provide a focal point for the development of an informed public opinion and that from the meeting will grow the kind of leadership that is needed to consolidate all of the groups that are seriously concerned with meeting this challenge.

There are similar signs of public interest in Canada. Many associations and groups have taken up the study of the question. A few years ago a special committee of the Canadian Senate set out to make a complete survey of land use in Canada. Later this month a Resources for Tomorrow Conference is being held in Montreal. This conference will bring together several thousand individuals representing every aspect of national interest to discuss the conservation and wise utilization of all of Canada's natural resources. Economists, biologists, sportsmen and, of course, foresters, and experts on water, soils and minerals will exchange views and seek to evolve a national policy.

As we look toward the future, I think we must have certain considerations in mind:

1. There will be far greater demands on the forests. The population of this country is growing at the rate of three million people a year, Canada is adding 400,000 people a year and world population is growing at the rate of forty million a year. We are going to have more and more people, but not more and more land. We know there will be less land available in the future to provide raw materials and other services for more people.

2. Industry will make an increasing number of products from wood pulp and cellulose. It is difficult to guess what the pulp and paper companies, for example, will be making in 1970 and 1980, but we certainly all look to an expanding future. It is clear that we must actively encourage timber growth

on all suitable lands—public as well as private.

3. North America's forest acres will be more productive. Most of the large private holdings today are well managed by present standards, but I am sure production of trees for lumber, plywood and for pulp production can be substantially increased. Many public and private groups are carrying on important research programs in the United States and Canada. We have learned how to make paper and other products out of a great variety of trees, for example. The growing use of hardwoods for pulp has taken a great load off the softwoods, helped forest management immensely and added to our inventory of usable timber.

4. The crops produced by small landowners will increase in value and importance. Because industry now provides a steady market for wood, the farmer has discovered that trees are indeed a cash crop. He grows trees. He plants millions of seedlings on idle land. He no longer destroys his woodlot with a single cutting. In the South, company woodyards are a constant reminder of the market for wood. Education everywhere is helping small landowners to appreciate that wood is a fine cash crop.

5. In my opinion, the weaknesses of the wilderness idea will become more and more apparent as the next decade moves along. All of the objectives of the wilderness idea can be achieved better in the economically strong, well-managed productive forest than in the neglected forests of a wilderness area.

6. Forest operations will be increasingly mechanized in order to keep the cost of wood down to where it is an economical raw material.

7. As the years go by pressure will be put on private lands more and more to serve the recreational needs of the people. Private landowners, particularly large landowners, must find ways in which these pressures can be met that are compatible with our major purpose of growing successive crops of timber. Industry is already following broad-minded policies in the public interest. Government officials at all levels must recognize the need for developing balanced policies that are clearly in the long-range interest of all concerned—not just the most vocal groups.

8. It seems to me that there is no good way to achieve all the results we will achieve without a growing cooperation among able and intelligent forest-minded men in industry, both here and in Canada; in government — federal, state, and provincial; in colleges and universities; and in conservationist groups whose basic aims are also our aims: *prosperous forests in perpetuity*. I therefore foresee such cooperation.

9. Nothing will be more important to all of us than our success in educating the people of the United States and Canada in the real meaning of such concepts as conservation, multiple use, wilderness areas and recreational use. Too many people take a superficial or emotional approach to these subjects without realizing the important economic and social implications of the policies these terms represent. The industry has been successful in educating the public in the importance of forest fire prevention. We are making great progress in educating small landowners in the importance of improving their management practices. But we must expand our efforts to reach an even broader audience with this basic message.

In my view, very briefly, we are moving into a time when conservation in its best sense will be the goal of all the forces which have an interest in the woods—economic, professional, recreational or sentimental. With cooperation we can succeed in the public interests. But if the forests of the future are to be strong and healthy and filled with foresters, it will be because they have a solid economic base under them.

Carl Schenk said something in 1917 which I would have agreed with then, but I didn't read it until forty years later. He said:

"We should not blame the man who transformed the primeval forests into barren wastes. You and I, in his place, and in his time, would have done the same. Unless we wish to turn entirely from the free enterprise system on which this country is founded, the natural permanency of our forests will continue to be based on the permanent financial success of their owners. And that, in turn, depends on wise legislation born from the good will of an enlightened public opinion."

I think that is a first-rate statement of policy for all of us.

Timber Production on Recreation Areas[1]

Donald J. Morriss

THE ALLOCATION of forest land to the various possible combinations of uses is a political and economic matter. This paper is confined to the silvicultural and planning considerations appropriate to the management of land where the decision has been made to include recovery of reasonable amounts of both timber and recreational values on the same land. It is intended to emphasize the importance of careful long range planning and to relate multiple-use management needs to the known and proven forest management systems and procedures. Recreational values are taken to include both the amenity or esthetic values and all of the on-the-ground recreational uses of forest land, such as for camping, hiking, nature study, riding, picnicking, hunting, fishing, mineral, leaf, twig, and insect collection, and general escape from urban tensions.

Since most of the initial effort to correlate recreation use with timber production has been by the federal government and its political subdivisions, discussion will be in terms of publicly managed land. However, the technical aspects of the problems encountered should be pertinent, in part at least, to the management of privately held lands where public recreation is a recognized management (or more often protection) asset. Public recreational use of privately-owned land is increasing. For instance a recent AFPI survey found that hunting and fishing are permitted on more than 50 million acres of large industrial forest land ownerships.

The surge in public demand for outdoor recreation is a mid-twentieth-century phenomenon. Its attendant problems are upon us and we are caught with precious little research and experience on which to base their solutions. We can, however, make a start toward choosing and adapting silvicultural systems and management prescriptions to enhance recreational values. Though they will be susceptible to much improvement, long range plans must be made. Organization of working circles at reasonable efficiency in a reasonable time requires a long look ahead. The introduction of uses other than timber production may modify management considerations but should not shorten the period considered in the initial plan.

Timber Management Modification

As human pressure on forest land increases, either by introduction of new uses in a given area or by increases in established uses, it is necessary and desirable to modify timber management practices. Modification has come to be a widely used term and sometimes a term which does not always mean the same thing to people with different interests. Modifications or changes in the design and location of access structures, abatement of construction and logging slash, and similar physical items are easily comprehended. Furthermore such changes have been taking place for many years to accommodate or raise the value of a number of forest based uses. In the case of silvicultural systems, however, the first problem is the choosing of cultural practices which are compatible with the existing or planned uses.

Forest areas cleared for recreational use, such as for ski runs and playing fields, are excluded from this discussion. For other on-the-ground recreational uses it is assumed that a forest cover will be essential. For areas where a view of the landscape is of major importance it is assumed that a general forest scene is preferred, that it will afford variety of cover, and that abrupt and drastic changes in the landscape are to be avoided to the extent that the timber use permits.

Rotations

The first and probably most important fact which must be faced is that trees and lesser vegetation are organisms; thus temporary. Each has an optimum life for utilization and if not utilized dies. Since it is not possible to arrest growth it is not possible to hold constant the food supply for game, the shade for fishing streams or picnic areas, or the appearance of the landscape. Planning for any combination of forest uses requires the prediction of the changes which are bound to take place and the prescription of practices which will guide the changes toward greater usefulness.

The inevitable changes due to growth are the basis for the establishment of rotations or stand structure goals for crops of forest products. Other forest uses, under planned multiple-use management, will usually also shift or rotate in conformance with the cyclic nature of forest cover. For a given large forest area (working circle) it should be possible to assemble reasonably accurate estimates of the ultimate managed yield of timber products, water, fish and game, suitable picnic and camping sites, livestock, or any other product which can be measured. However, the planner must recognize that the amount of the production of

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each of these assets will vary over a wide range during the life of the various timber stands. In other words the production of individual drainages, compartments, or stands in the area will vary widely over time but the total production, under knowledgeable management, will remain approximately constant. By the same token the overall appearance of the area will tend to stabilize but within the area the location of forest cover by age or condition would be gradually but constantly changing.

Since the rotation of uses are interdependent and must be correlated with the growth of trees it will often be most efficient to plan for the local rotation of such items as animal numbers and campsites to fit the less flexible rotation of timber crops. Also, study of the cyclic pattern of the managed forest cover will lead to abandonment of any ideas of attempting to maintain the status quo, such as indefinite retention of overage trees.

Silvicultural Systems

In many places the first attempt to correlate the timber and both intensive and extensive recreational uses has been to prescribe improvement or risk cutting. These are accepted and useful cutting practices. More often than not improvement cutting is appropriate as a first entry in young stands and in previously unmanaged stands below rotation age. The same is true of risk cutting in overage stands where objectives include a speed-up of coverage to reduce mortality losses and chances of pest damage and to remove danger trees. Both should usually be "one-shot" entries. To perpetuate both uses the forest must be regenerated, either continuously or periodically. Thus it is necessary to adopt a regeneration system with plan controls to assure its application

At first glance, regeneration by selection cutting would appear to be widely applicable. However, selection cutting requires the establishment and maintenance of a continuous, related, and intimately mixed distribution of tree size classes. Each size class should outnumber the next larger class preferably by a uniform factor or quotient. The forest structure is characterized by relatively few trees of the superior size often desired by recreation planners and many seedlings and saplings which will often be incompatible with intensive human use of campgrounds and similar areas.

The selection system might well be used for certain areas which have a high esthetic value but relatively little on-the-ground use, such as the borders of heavily used roads and accessible waterfronts. However, it is not an efficient silvicultural system under several conditions which may be beyond the forester's control. These include: (1) types where either economics or esthetics require the arrest or reversal of a trend toward climax cover, (2) areas where game browsing precludes satisfactory regeneration, or composition of regeneration, or (3) areas of topography too rough for frequent light harvesting. In the future, genetic improvement may rule out selection on additional areas.

Where selection is planned, the major modification which is likely to improve the esthetic quality of the landscape is to increase the maximum tree size in the planned structure. While rotations are not set for selection cutting, this could well be the size locally attained at pathological rotation age. Because of the danger of setting up conditions conducive to the propagation and spread of insects and diseases, retention of trees beyond pathological age should usually not be planned. For stands of species which deteriorate prior to their technical rotation age conversion may sometimes be desirable.

In working circles with a significant total area of stands planned for selection with a growing stock component of superior size, a working group should be established. This is defined in our Society's *Forestry Terminology* as comprising "those parts of a forest that have the same silvicultural management and rotation." In U. S. Forest Service plans a broader definition is used and the term may be applied to a selection working group which is managed without a rotation. Cutting is controlled by volume and direction for frequent light cutting is obtained by observation of the location of size classes exceeding those shown in the adopted ultimate stand structure curve.

In general, planners should remember that management of large forests, when based on the selection silvicultural system, is exacting in requirements and usually quite expensive. It has been tried for commercial production and abandoned in many parts of the world.

Of the clearcutting system choices, group selection probably is the most promising and flexible for the orderly treatment of timber on areas of heavy human use. Such areas which are also of heavy, inadequately controlled, animal use are an exception to this unless the situation justifies expensive protection measures on numerous small reproduction groups or unless it is feasible to plan and achieve effective control of the animal population.

Mention of clearcutting often seems to turn on the red light to some people outside our profession and possibly to one here and there within it. This may be due to unfortunate past experience, prejudgment in the absence of adequate experience, or the differences in the definition of the term. For instance even our own *Forestry Terminology* incorrectly defines group selection as "a modification of the selection method. . . ." It is quite obviously a clearcutting method since proper organization of a working circle or working group under group selection requires the establishment of an average rotation age and control of the area harvested in each cutting period, in common with the other clearcutting methods.

Where applied on recreation areas several modifications may be prescribed in the interest of improving appearance and accommodating human activity. The first, and most important from a planning standpoint, is in advancing the selected average rotation from economic, silvicultural, or techni-

cal to, but not beyond, pathological rotation age. For species-site combinations where trees remain healthy to great ages, a compromise rotation age might well be selected to avoid unrealistically high investments in growing stock. Sometimes a so-called "natural rotation" is suggested. This appears to be a plan to hold each tree until it dies or is likely to die before the next entry. This ignores the essential management planning requirement of assuring orderly and desirable reproduction. It also invites insect and disease losses which may lower both timber production and recreation values.

A second important modification is in setting up a system of treatment prescriptions and guidelines for their preparation and use. These would include group cutting size, shape, distribution, and timing. Softening of landscape changes and improvement of utility for intensive use can be accomplished by attention to these items. Where reproduction by artificial means is planned, the size and shape of openings can be mainly dictated by esthetics. Almost always cutting edges can be made compatible with topography without loss of production or of logging efficiency.

Clearcutting is defined by our Society as applicable to entire stands. The terms "strip cutting" and "patch cutting" have come into use to describe clearcutting in parts of stands. These are often considered as differing from group selection since the reproduced openings are of a size greater than the minimum sized area which is locally mapped in stand classification. Cutting methods employing these relatively large group clearcuts may be prescribed where recreation use is extensive, such as for hunting, or in scenic areas where operations are conducted at considerable distances from sites of important views. The planning steps involved are similar to those required for traditional group selection.

Several other variations of clearcutting harvesting methods may be used depending upon windfirmness and other attributes of the species composing the type. For instance, seed tree or shelterwood cutting may be prescribed to soften a distant view. This requires an additional management control to assure the timely removal of the seed source.

Such harvest by two or more cuts is, in some limited situations, silviculturally impractical. Two outstanding examples occur in parts of the Rocky Mountains. Some stands particularly of old growth lodgepole pine, are so completely infected with dwarfmistletoe that healthy reproduction can only be obtained by complete treatment, including removal of noncommercial stems. Barring a breakthrough, such as development of an efficient chemical, biotic, or antibiotic control method, modifications for esthetics will have to be confined to the shape, placement, and timing of cutting and to logging methods and postcutting treatment. Alternatives are to dedicate the entire fiber production capacity to scenery or to educate ourselves to acceptance of the results, as we apparently have in the case of highways and farming.

The other example is in the drier parts of the range of some species, particularly ponderosa pine, where as yet satisfactory regeneration can be obtained only by massive land preparation and planting. The choices here may be ultimate acceptance either of terraced landscapes or brush fields—whether or not the timber is utilized. Research may, of course, point the way to a more acceptable choice.

Yields

In some areas of heavy current or expected recreational use, planners have been wrestling with the problem of predicting yields. It is generally assumed that intensive use for recreation will, for one reason or another, reduce the yield of forest products. Remembering that exclusive use areas, such as ski runs, should be excluded from the area statistics, it is difficult to find a basis for making such a reduction.

In selection cutting some trees would usually be carried long past financial maturity and also the point of mean annual increment culmination. This could be cited as a yield sacrifice. However, since an intimate mixture of younger trees will, by frequent treatment, be spaced for nearly complete utilization of site capabilities it could also be argued that there will be no total yield reduction. If there is any loss it should be less than the error which is likely to exist in a yield prediction. Thus, for the present at least, it appears practical to make no yield discounts for losses attributed to esthetic or recreation use area improvement under the selection silvicultural system.

The initial calculated yield from clearcutting at a pathological rotation age will be less than a calculated technical rotation harvest yield. This difference will be reflected in allowable cuts expressed in volume units. However, it is likely that the recreation function will require, and possibly partly finance, a higher order of intermediate treatment than would otherwise be provided. Additional usable material removed in these operations would tend to offset the harvest yield which is foregone in the interest of recreation and also to advance the age of mean annual increment culmination. This should be true, even on highly developed recreation use areas, where timber yield will be only incidental to the primary use. Until actual yield quantities are available, the inevitable errors of forecasting can be nullified by area control of the harvest cut and good guides for intermediate cutting.

In many parts of the country normal yields are discounted to arrive at estimates of expected yields of stands being brought under management. This process is also often used to estimate sustained-yield capacity, which is the predicted yield after a working circle has been completely organized. Sustained-yield capacity is a difficult prediction since it applies only to yields expected after attainment of an orderly distribution of age classes—a period which is usually at least one rotation in the future. In either prediction there is a tendency to apply too great a discount. Numerous re-

search efforts in this field have demonstrated that growth approaches the so-called normal over a wide range of stocking. Research reports now cover such a wide variety of types and geographical locations that this finding may safely be accepted for long range planning. In general normal growth may be predicted for the forested part of recreation areas if seedling to pole size stocking is 70 percent or more of normal. The forested portion should include narrow roads and trails and small openings which are, or will be, underlain by tree rocks. The appropriate land area discount can easily be estimated, often from aerial photographs. It consists of rock outcrops which tree roots cannot penetrate completely and openings too large for full root utilization by the time stands reach minimum merchantable size.

For effective intensive planning and control of cutting, yield estimates are required. Where sizable modifications are made it may sometimes be desirable to make an adjustment between the harvest and intermediate cutting yields. If the prescribed modifications result in increasing the average age of trees at harvest cutting this segment of the yield will be reduced but the intermediate yields increased. Until statistics from continuous or periodic inventories and properly kept long time cutting records become available there will be no sound basis to assume that there will be any sacrifice of total yield in the interest of other uses. In areas where roundwood below the size of the locally merchantable sawlog cannot be used there would usually be some loss. Here, however, the loss would be of less importance than it would be in an area of high market demand. Also, such situations are fast disappearing. It may safely be assumed that utilization of small material will be practical long before the organization of most working circles is completed.

The Educational Challenge

An important consideration which is corollary to planning forest use coordination is the professional responsibility, which we all share, to explain some of it to the general public. A preponderant part of the correlation job is concerned with the preservation or enhancement of esthetic attributes. The extent of our opportunity to improve the management of commercial forest lands, and especially those publicly held, hinges to a considerable degree on general public acceptance of our practices. A large part of the so-called public opinion stems from what we see. In our "America The Beautiful" we accept the "fruited plain" and the "amber wave of grain." We cannot logically object to the annual plowing, if properly done, which precedes the wave of grain. The "purple mountain majesty" on close inspection will be found to have spots of recently reproduced areas. As is the plowing, they are important to our economy. Certainly we can learn to accept them, after care is taken to establish them properly.

Accurate public understanding of the total forest land management job would include some understanding of the efficient production and use of timber products. Some of the operations involved cannot be camouflaged and others can be hidden only at exorbitant cost. It is evident that additional advertising is in order. If our product is, in fact, well planned and executed forest management, we need to place it where people can see it and explain what it is and why we all need it. This is the so-called show window approach. Maximum advertising and educational values of good demonstrations will not be attained by timidly tucking them in out-of-the-way places. They need to be well done, prominently displayed, and often repeated.

Summary

Increasing amounts of forest land are being required for human uses and products other than those manufactured directly from trees. An important concomitant value of forest land is its recreational value for both intensive and extensive on-the-ground use and for the rewarding views it affords. Where this use is made in conjunction with the continuous production of timber crops long range planning and management control are essential. Since trees are the dominant feature of the areas involved and since they are living, ever-changing plants, plans and subsequent controls should be designed to remain in tune with the man-modified natural processes involved. This requires the adoption of silvicultural systems, management practices, and operating restrictions which will most nearly satisfy the needs of both timber and recreational use. An additional, and essential, requirement is that reproduction must be assured.

It is likely that reproduction through selection cutting will have quite limited application and that group selection will be the best choice in most situations of intensive human use and intimate observation. With the exercise of care in their application other clearcutting practices should be quite appropriate in many areas of extensive human use and more remote observation.

Advancement of rotations or the top diameters in stand structures will no doubt prove to be desirable in the most heavily used areas. The design of operation, such as its timing and the size and shape of reproduction cuttings, can be prescribed to enhance, or at least, preserve appearances and recreational area cover. There will be limited areas where massive land treatment cannot be avoided.

It is doubtful that such modifications will significantly affect predicted yields. In most initial planning efforts yield discounts should be avoided but a system of records established to accumulate actual yield figures for use in subsequent plan revisions.

Finally as members of a profession dedicated to the wise use of our forest land, we should each share in the task of demonstrating, explaining, and accounting for our work to warrant the continued support of the using and financing public.

Aerial Spraying of 2,4,5-T for Releasing Conifers in Rhode Island[1]

James H. Brown, Jr.,
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IN RHODE ISLAND, most of the forested areas of the well-drained uplands are in a mixed oak forest of sprout origin made up of low quality white oak (*Quercus alba*), scarlet oak (*Quercus coccinea*), black oak (*Quercus velutina*), and red maple (*Acer rubrum*). Much of this forest has been burned in recent years and in many areas conifers, other than pitch pine (*Pinus rigida*), have all but been eliminated from the stands. In other areas where seed sources are present, white pine (*Pinus strobus*) occurs in large numbers in the understory. These pine, if released, would substantially increase the value of Rhode Island forests.

As a result of the promise attributed to aerial application of herbicides as a quick and cheap means of releasing conifers (*2, 5*), aerial applications of 2,4,5-T were made in August 1955, 1956, and again in 1958 by the Rhode Island Division of Forests. The Rhode Island Agricultural Experiment Station's Department of Forestry cooperated with the Division in evaluating the effectiveness of the spray applications. This report is an evaluation of the effect of the different applications of 2,4,5-T used on native hardwoods.

Study Methods

Two areas were treated in western Rhode Island on the Arcadia State Forest. Area 1 had been burned over in 1951 and sprouts at the time of the first spraying were about 5 feet in height. Most of the stems present were oaks including white, black, scarlet, and scrub oak (*Quercus ilicifolia*), with some red maple, gray birch (*Betula populifolia*) and aspen (*Populus grandidentata* and *Populus tremuloides*). Pines were sparse on most of the study area. The number of hardwood stems ranged from 1,300 up to 17,000 stems per acre and averaged 7,464 per acre.

Area 2 consisted of mixed oak stands 50 to 80 years old and 50 to 60 feet in height, with a considerable number of conifers in the understory. Hardwood stems numbered about 4,026 stems per acre, with an average of 641 stems over 0.6 inches diameter breast height. Conifers consisting mainly of white pine numbered about 634 stems per acre.

Applications of herbicide were made by helicopter on area 1 in 1955 and 1958, and on area 2 in 1956 and 1958 (Table 1). In the case of each application, a low-volatile ester of 2,4,5-T was used. The helicopter flew at a height of 40 to 50 feet above treetops at a speed of 30-35 miles per hour.

All sprayed areas evaluated occurred on well-drained to excessively well-drained sites.

In general, the methods used in this study were those suggested by Roe (*6*). Sample plots were located randomly in each treatment area. Cruise lines or lines crossing the spray areas perpendicular to the line of flight of the helicopter were selected randomly, and on each cruise line plot locations were randomly selected. At each sampling point a plot center was established and nested circular plots with radii of 3.72 feet, 8.33 feet and 26.3 feet were marked off from which data were collected on low brush, tall brush, and trees, respectively. The categories used for classifying vegetation were as follows:

1. Trees—all vegetation over 2 inches d.b.h.
2. Tall brush — vegetation 0.6 inch d.b.h. and larger.
3. Low brush—vegetation smaller than 0.6 inch d.b.h.

A total of 91 plots were established, with from 9 to 15 plots in each treatment area. Injury was measured through use of the following injury classes:

D—Dead (80 percent or more defoliated—no new sprouts)

Ts—Top dead, new sprouts (80 percent or more defoliated—new sprouts)

S—Severe (50-80 percent defoliated)

L—Light (20-50 percent defo-

TABLE 1.—TREATMENTS OF 2,4,5-T USED SHOWING TIME OF SPRAYING[1] AND ACREAGE SPRAYED

Treatment	Year sprayed	Acreage sprayed
AREA 1		
1¼ lb. a.e. in 7 gal. water/acre	1955	15
1¾ lb. a.e. in 7 gal. water/acre	1955	15
0.6 lb. a.e. in 3 gal. water/acre	1958	8
1 lb. a.e. in 3 gal. water/acre	1958	14
1 lb. a.e. in 5 gal. water/acre	1958	8
AREA 2		
1 lb. a.e. in 7 gal. water/acre	1956	35
1¼ lb. a.e. in 7 gal. water/acre	1956	90
1 lb. a.e. in 7 gal. water/acre	1958	234

[1]All applications were made in the third week of August.

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[1]Contribution number 1020 of the R. I. Agric. Expt. Sta., Kingston.

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N—None (less than 20 percent defoliated)

Data were collected in August and September 1959. It was felt that enough time had elapsed so that full effects of the treatments would be apparent.

Results

Over-all effects.—Effectiveness of the spray treatments were evaluated on the basis of percentage of stem occurring in the first 3 injury classes including: (1) D—dead, no new sprouts; (2) Ts—top dead, new sprouts; and (3) S—severe, 50-80 percent dead. This greatly simplified interpretation of results. It was felt that any stem injured to the extent represented by these categories would be sufficient to insure adequate release. All calculations are based on number of individual stems, not on sprout clumps.

Of the 5 treatments used in the burned over area, the 1 pound 2,4,5-T a.e. in 3 gallons of water per acre application resulted in the best kill. The average percentage occurring in the D, Ts, S grouping for all brush was 90 percent (Table 2). This treatment was found to be significantly different from the other four treatments at the .05 and .01 significance levels. Differences between applications using 1¼ pounds a.e. in 7 gallons of water, 0.6 pound a.e. in 3 gallons of water, and 1¾ pounds a.e. in 7 gallons of water were not significant, while the 1 pound a.e. in 5 gallons of water application having an average of only 25 was significantly different from the other 4 applications. The unreasonably poor results obtained using the 1 pound a.e. in 5 gallons of water were attributed to an 8-9 mile per hour wind at the time of application.

On area 2 the treatments evaluated were found to be similar in their effects on trees (Table 2). The two 1 pound a.e. in 7 gallons of water applications gave average percentages of 78 and 74, whereas the 1¼ pounds a.e. in 7 gallons of water application resulted in 67 percent of the trees being killed or seriously injured. When analyzed statistically the 1¼-pound treatment was not significantly different from the 1 pound treatments.

In contrast to the effect on trees, a much smaller percentage of the brush was seriously injured. This can probably be attributed to the interference afforded by the upper levels of the canopy, which prevent adequate coverage of the underbrush. Arend (*1*) indicates that for multistoried stand conditions, two spray applications at 2 or 3-year intervals are more effective than one heavy application. Differences in kill of brush on the different treatment areas were attributed to variations in canopy density.

TABLE 2.—EFFECT ON HARDWOODS OF THE DIFFERENT APPLICATIONS OF 2,4,5-T BASED ON THE PERCENTAGE OF STEMS DEAD (D), TOP DEAD WITH NEW SPROUTS (Ts) AND SEVERELY INJURED (S)

Treatment	Year sprayed	All brush % D	% Ts	% S	% (D+Ts+S)
AREA 1					
1 lb. a.e. in 3 gal. water/acre	1958	52	24	14	90** [1]
0.6 lb. a.e. in 3 gal. water/acre	1958	29	11	28	68
1¼ lb. a.e. in 7 gal. water/acre	1955	38	24	3	65
1¾ lb. a.e. in 7 gal. water/acre	1955	31	12	18	61
1 lb. a.e. in 5 gal. water/acre	1958	9	12	4	25**

		Trees				All brush			
Treatment	Year sprayed	% D	% Ts	% S	% (D+Ts+S)	% D	% Ts	% S	% (D+Ts+S)
AREA 2									
1 lb. a.e. in 7 gal. water/acre	1958	48	15	15	78	9	23	1	33
1 lb. a.e. in 7 gal. water/acre	1956	43	7	24	74	2	12	11	25
1¼ lb. a.e. in 7 gal. water/acre	1956	49	0	18	67	1	1	1	3*

[1]This indicates that the difference between the treatment mean in question is significantly different from the mean or means of other treatments at the 5 percent level or 1 percent level of significance where * denotes significance at the 5 percent level and ** at the 1 percent level using a Student "t" test. Tests were applied only to the combined values (D + Ts + S).

TABLE 3.—EFFECT OF THE DIFFERENT APPLICATIONS OF 2,4,5-T ON THE HARDWOOD SPECIES ENCOUNTERED BASED ON THE PERCENTAGE OF STEMS DEAD (D), TOP DEAD WITH NEW SPROUTS (Ts), AND SEVERELY INJURED (S)

Species	Treatments (percent D + Ts + S) (1#-3 gal)	(0.6#-3 gal)	(1¼#-7 gal)	(1¾#-7 gal)	(1#5-gal)
AREA 1 (ALL BRUSH)					
Quercus alba	96	80	80	38	12
Quercus coccinea	89	69	95	72	23
Quercus velutina	—[1]	90	100	67	10
Acer rubrum	97	52	36	31	4
Quercus ilicifolia	84	100	69	30	0
Prunus serotina	91	0	0	14	0
Castanea dentata	100	100	—	100	100
Betula populifolia	60	0	40	—	0
Populus tremuloides	100	—	0	—	0
Sassafras albidum	—	—	66	—	92
Amelanchier spp.	0	—	0	—	—
Carpinus caroliniana	100	—	—	—	—
Nyssa sylvatica	100	—	—	—	—
Carya spp.	—	0	—	—	—

Species	Trees (1#-7 gal)	(1#-7 gal)	(1¼#-7 gal)	All brush (1#-7 gal)	(1#-7 gal)	(1¼#-7 gal)
AREA 2						
Quercus alba	95	83	72	63	54	0
Quercus coccinea	56	80	10	50	100	—
Quercus rubra	0	—	—	0	—	—
Acer rubrum	—	0	—	0	38	—
Fagus americana	0	—	—	0	—	—
Cayra spp.	—	0	—	—	—	—
Quercus ilicifolia				4	29	0
Prunus serotina				33	40	0
Quercus velutina				100	—	0
Castanea dentata				100	—	—

[1]This denotes the absence of stems of the species in question on plots sampled from a given treatment area.

Effects by species.—In general the various treatments applied were most effective on the oaks. On area 1 black oak, scarlet oak, and white oak generally reacted similarly to each treatment, with D, Ts, S values greater than 60 percent in most cases (Table 3). Here, scrub oak was the least affected of the oaks, but satisfactory kills of this species were obtained for all treatments except the 1¾ pounds a.e. in 7 gallons of water and the 1 pound a.e. in 5 gallons of water. On the other hand, when occurring as an understory species as on area 2, injury to scrub oak was slight.

On area 2, white oak trees were apparently more easily damaged than scarlet oaks (Table 3). Brinkman (*3*) reported that white oak was easier to kill than black and scarlet oak.

Injury to red maple was less than that for the oaks. McConkey (*4*) reported similar results, but kills were, in general, less than in the present study. In the case of area 2, where red maple occurred primarily as an understory species, injury was slight. Black cherry (*Prunus serotina*), gray birch, and aspen appeared to be fairly resistant to all treatments except for the 1 pound a.e. to 3 gallons of water application where satisfactory kills were obtained. There was a good kill of sassafras (*Sassafras albidum*) and chestnut (*Castanea dentata*) wherever encountered on the treatment areas.

Summary and Conclusion

From results obtained in this study, it appears that dosages of 2,4,5-T as low as 0.6 pound a.e. per acre can give satisfactory results, particularly in killing white, black, and scarlet oaks. However, when using 1 pound a.e. per acre diluted in several different quantities of water results ranged from a high of 90 percent of all brush to a low of 25 percent. The 90 percent results were obtained using 1 pound a.e. in 3 gallons of water per acre. This treatment resulted in the best over-all kill of all species. All other treatments (except the 1 pound a.e. in 5 gallons of water per acre application) resulted in a satisfactory kill of oak, but were not as effective on other species. The 1 pound a.e. to 3 gallons of water per acre application yielded better results than other 1 pound treatments or heavier dosages of 1¼ pounds or 1¾ pounds made the same day on similar sites. All portions of the spray areas sampled were on well-drained or excessively well-drained sites. Any differences in effects due to relative wetness of the sites and possible resulting variation in translocation were considered to be negligible.

The three applications applied to large trees in area 2 resulted in reasonably good kills of the oak overstory, but poor kills of oak and other species in the understory. This has been attributed to the protection afforded by the overstory canopy preventing herbicide from reaching the lower levels. Better kills of the understory could be obtained if two light applications were applied several years apart. In this particular instance white pine, and in some cases red pine, were present along with oak and other hardwoods in the understory. Much of the pine which averages 15-20 feet in height is taller than the hardwood brush and competition from the hardwoods will not be serious. In certain areas where the conifers are small, the hardwoods are almost certain to overtop them and nullify any beneficial effects produced through killing 70-80 percent of the oak overstory.

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Brush Seedlings After Controlled Burning of Brushlands in Southwestern Oregon

H. Gratkowski

EXTENSIVE evergreen brushfields, almost devoid of trees, occupy hundreds of thousands of acres of commercial forest land in the Coast Range and Siskiyou Mountains of southwestern Oregon. Aerial spraying with herbicides shows promise as a method for controlling this brush and preparing many sites for reforestation, but prescribed burning may be necessary to remove the impenetrable mass of dead brush before the sites can be planted or seeded. Burning would also eliminate the greatly increased fire hazard of the standing dead brush, and—if properly timed—set back resprouting brush a second time.

Prescribed burning of chemically sprayed brush has two major drawbacks. First, dead brush forms a hot and flashy fuel which should be burned only by competent fire control personnel. Second, burning may stimulate germination of dormant brush seeds in the soil, producing a dense stand of new seedlings to compete with conifer plantations established in the burned areas.

The study reported in this paper was designed to learn whether controlled brush burning stimulates germination of accumulated brush seed in the duff and soil of a manzanita-ceanothus-live oak (*Arctostaphylos patula-Ceanothus cordulatus - Quercus chrysolepis*) brush type in the Siskiyou Mountains of southwestern Oregon.

Effect of Fire on Brush Seeds

The role of fire in maintaining, extending, and regenerating chaparral has been studied in other areas, and many investigators have observed or studied effects of burning on germination of brush seeds. The following paragraphs summarize some of the more applicable studies.

Evidence indicates that seeds of many chaparral species may be long-lived and that large quantities of dormant but viable seed may accumulate in duff and soil until conditions are favorable for germination. Duff and surface soil samples collected under virgin mature stands of mixed conifers in the central Sierra Nevada contained an average of 2,046,000 viable ceanothus, manzanita, and *Ribes* seeds per acre (*5*). In a chaparral area in southern California, Stone and Juhren (*7*) found as many as 2,150 sugar sumac[1] (*Rhus ovata* Wats.) seeds per plot on 100-square-foot plots that contained bases of mature plants (936,540 seeds per acre). They also reported that greasewood chamise (*Adenostoma fasciculatum* H. & A.) seed content in the duff of comparable plots was as high as 2 million seeds per plot. Germination of only a small fraction of the available brush seed on any of these areas could produce a dense chaparral.

Several investigators have reported germination of brush seed and the presence of new brush seedlings after fires in chaparral areas. In southwestern Oregon, Foster (*2*) noted a correlation between presence of snowbrush ceanothus (*Ceanothus velutinus* Dougl.) and evidence of fire. His observation was later substantiated when tests by Curtis (*1*) showed that fire can increase germination of snowbrush ceanothus seed stored in damp soils. Stone and Juhren (*7*), studying fire-induced germination of sugar sumac seeds in California, found 10 to 68 seedlings per 100 square feet on burned plots; but almost no seedlings on unburned plots. Others have reported germination of seeds of several *Arctostaphylos* and *Ceanothus* species after fire in chamise chaparral in California (*3*) and establishment of dense stands of big sagebrush (*Artemesia tridentata* Nutt.) seedlings after planned burning to improve range lands in Idaho (*4*). In general, the investigators seem to agree that a considerable portion of the new brush seedlings appearing on these burned brushlands were produced from residual seed present in the soil when the fires occurred.

Tests of the effect of dry heat on viability and germination of brush seeds indicate that the heat of fire stimulates germination of seeds of many chaparral brush species. Heat treatment has been shown to increase germination of common manzanita (*Arctostaphylos manzanita* Parry), Parry manzanita (*Arctostaphylos Parryana* Lemmon), chaparral whitethorn ceanothus (*Ceanothus leucodermis* Greene), hairy ceanothus (*Ceanothus oliganthus* Nutt.), snowbrush ceanothus, western chokeberry (*Prunus demissa* [Nutt.] Walp.), laurel sumac (*Rhus laurina* Nutt.), and sugar sumac (*1, 6, 8*). In addition, Wright (*8*) found that seeds of certain brush species endured higher temperatures than seed of some associated conifers and grasses and suggested that this might account for the aggressive invasion of shrubby plants on burns and the formation of brushfields after forest fires. However, Sampson (*6*) learned that chaparral fires also killed many species of brush seeds in soil where soil tem-

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[1]Common names of brush species are those listed in *Standardized Plant Names*, Kelsey, Harlan P. and William A. Dayton. 2nd ed., 1942, 675 pp.

TABLE 1.—BRUSH SPECIES AND FREQUENCY ON FORTY ONE-MILACRE SAMPLE PLOTS IN UNTREATED BRUSH AT ONION MOUNTAIN[1]

Common name	Botanical name	Frequency[2]
		Percent
Greenleaf manzanita[3]	*Arctostaphylos patula* Greene	92
Canyon live oak	*Quercus chrysolepis* Liebm.	68
Mountain whitethorn ceanothus	*Ceanothus cordulatus* Kell.	20
Golden evergreenchinkapin	*Castanopsis chrysophylla* var. *minor* (Benth.) A. DC.	12
California buckthorn	*Rhamnus californica* Esch.	10
Baldhip rose	*Rosa gymnocarpa* Nutt.	5
Grapeleaf california dewberry	*Rubus vitifolius* C. & S.	5
Bitter cherry	*Prunus emarginata* (Dougl.) Walp.	5
Scrub tanoak	*Lithocarpus densiflorus* var. *echinoides* (R. Br.) Abrams	2
Buckbrush ceanothus	*Ceanothus cuneatus* (Hook.) Nutt.	2
Hoary manzanita	*Arctostaphylos canescens* Eastw	2
Osoberry	*Osmaronia cerasiformis* (Torr. & Gray) Greene	2

[1]A small amount of red whortleberry (*Vaccinium parvifolium* Smith), Lobbs gooseberry (*Ribes lobbi* A. Gray), creambush rockspirea (*Holodiscus discolor* [Pursh.] Maxim.), and Pacific madrone (*Arbutus menziesi* Pursh) are also present on the area, although no plants of these species were encountered on the 40 plots upon which these figures are based.

[2]Percentage of plots containing the designated species.

[3]Burls with mature stems.

peratures exceeded 300° F. for a period of several minutes.

The way in which heat stimulates germination of brush seeds is not well understood. In at least one brush species, sugar sumac, dormancy results from impermeability of the second of three seed coat layers. Heat induces germination of the seeds by rupturing the second seed-coat layer along the edge of the seed immediately above the micropyle, thereby allowing entry of water through the underlying third seed-coat layer (*7*). Dormancy of other chaparral seeds, however, may be due to other factors; and germination after heat treatment may be due to other effects.

Study Area and Sampling Method

In July 1955, three brushfields covering a total of 100 acres at Onion Mountain on the Siskiyou National Forest were sprayed with low volatile esters of 2,4-D and 2,4,5-T from a fixed-wing plane.[2] Species composition consisted of greenleaf manzanita, canyon live oak, mountain whitethorn ceanothus, golden evergreenchinkapin, and at least a dozen other species of lesser importance (Table 1). Degree of control after spraying was similar on all three areas. Fourteen months after spraying, a few species were dead. Aerial parts of almost all others were killed to ground level, but green sprouts were growing from burls and roots.

[2]Aerial spraying and burning were carried out by the Siskiyou National Forest.

FIG. 1.—Burning an aerially sprayed brushfield at Onion Mountain.

Two of the sprayed brushfields, occupying more than 80 acres, were burned in late September 1956 (Fig. 1) and a half-acre patch of untreated green brush was burned at the same time. Weather conditions were hot and dry; and the treated brush formed a hot, flashy fuel that burned rapidly and cooled quickly, leaving a light layer of ash on the ground. The third sprayed brushfield was left unburned.

In September 1957, 40 one-milacre plots in each of the burned areas were examined to determine the species and number of living brush seedlings that had germinated after burning. The plots were systematically spaced on four lines extending through each burned area. Forty similar, systematically spaced plots were examined in the sprayed brushfield that had not been burned; and 40 more were in unsprayed and unburned green brush around the perimeter of the three aerial spray plots. In all, 200 one-milacre plots were studied in the five sampling areas.

Results and Discussion

Brush burning evidently stimulated germination of large amounts of residual brush seed in the manzanita-ceanothus-live oak type. At the end of the first summer after burning, 73 percent of the sample plots in the burned areas were stocked with first-year brush seedlings, while only 5 percent of the plots in unburned areas contained seedlings. In addition, stocked plots in the burned areas contained far more brush seedlings per plot (average, 14) than were found on stocked plots in the unburned areas (average, 1 per plot). One unusual milacre plot on a sprayed and burned area contained 283 living and more than 100 dead mountain whitethorn ceanothus seedlings. Numerous dead greenleaf manzanita, hoary manzanita, and mountain whitethorn ceanothus seedlings were found on all burned areas.

At the end of the first summer after burning, the burned areas

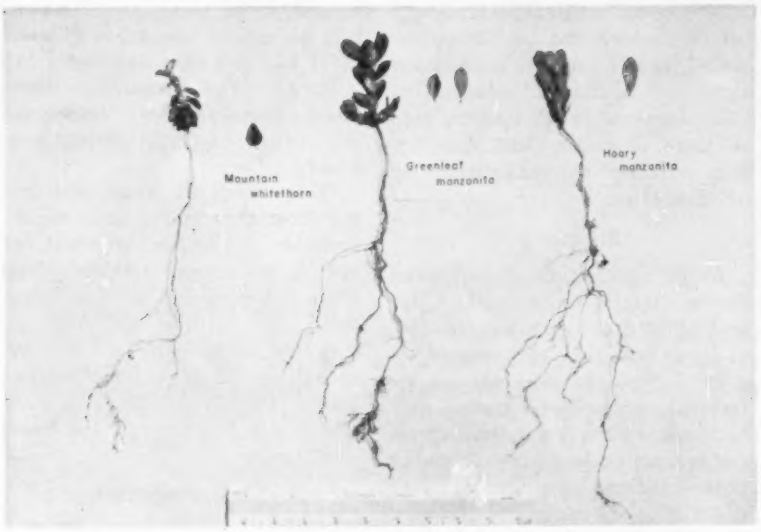

FIG. 2.—Typical specimens of brush seedlings most abundant on burned areas at Onion Mountain. Eighty-seven percent of the seedlings were mountain whitethorn ceanothus.

contained an average of more than 10,000 new brush seedlings per acre (Table 2). The unburned areas, in contrast, contained an average of only 62 seedlings per acre. Some variation occurred in numbers of seedlings in the three burned areas. This probably was due to the amount and character of seed produced by the various brush species, rather than to differences in treatment.

At least 16 different species of woody shrubs were present on the study area, but only 4 of these were found as seedlings on the burns. About 87 percent of the seedlings on the burned areas were mountain whitethorn ceanothus, and 12 percent were greenleaf manzanita. The remainder were hoary manzanita and buckbrush ceanothus (less than 1 percent combined). All four species produce small hard seeds or stony nutlets, and all belong to genera in which heat treatment has stimulated germination of seeds of related species (*6, 8*). Appreciable numbers of the very small, smooth, and glossy ceanothus seeds may have slipped through the litter and duff into the surface soil, where they were protected to some extent from lethal temperatures during burning. Larger seeds, such as acorns suspended in the duff and litter, probably were destroyed when this material was consumed by fire. A few canyon live oak seedlings were found under unsprayed green brush, but none were found on burned areas.

Almost all of the living manzanita seedlings were vigorous in appearance and seemed to be well established on the burned areas at the end of the first summer. Many mountain whitethorn ceanothus seedlings, on the other hand, apparently germinated late in the season and were very small. All species had well-developed root systems by the end of the first summer after germination (Fig. 2). Measurements of a number of seedlings revealed that roots of the manzanita and ceanothus seedlings averaged about 8 inches in length.

Spraying that was not followed by burning evidently did not create conditions suitable for germination of brush seeds in the duff and litter or in the soil beneath, although defoliation and top kill allowed more sunlight to reach the litter surface. Only one gooseberry seedling was found on the 40 sample plots in the sprayed area that was not burned (Table 2). Germination of ceanothus and manzanita seeds under the sprayed but unburned brush may have been inhibited by microclimatic or other conditions in the layer of duff and litter, which was as much as 4 inches deep on some plots. At least in the case of ceanothus seeds, however, it may be possible that continued dormancy was due to a lack of the stimulus provided by burning.

TABLE 2.—NUMBER OF BRUSH SEEDLINGS ON SAMPLE PLOTS AT ONION MOUNTAIN 1 YEAR AFTER TREATMENT[1]

Brushfield condition	Mountain whitethorn ceanothus	Greenleaf manzanita	Hoary manzanita	Buckbrush ceanothus	Canyon live oak	Lobbs gooseberry	Total seedlings per acre
Burned:							
Unsprayed	215	45	0	0	0	0	6,500
Sprayed	694	68	0	0	0	0	19,050
Sprayed	195	42	2	1	0	0	6,000
Unburned:							
Unsprayed	0	0	0	0	4	0	100
Sprayed	0	0	0	0	0	1	25

[1]Forty 1-milacre plots were examined in each of the five areas.

Application

Despite the fact that brush burning stimulates germination of brush seeds—either by the effect of heat on seeds or by creating conditions favorable for germination—the use of fire in combination with aerial spraying will probably be necessary for economical reclamation and reforestation of the extensive brushlands in southwestern Oregon. Even where brush can be controlled by successive aerial applications of herbicides, the impenetrable mass of dead brush and litter must be removed before the lands can be planted or seeded with conifers. Mechanical eradication is not feasible on much of the mountainous terrain; and even on more gentle terrain, controlled burning would probably be more economical.

The number of brush seedlings produced after burning in this brush type is considered large enough to endanger survival of conifer plantations established in burned areas. In a study of plant succession after burning in a

sprouting manzanita and ceanothus cover in California, almost 60 percent of the brush seedlings that survived the first summer were alive 5 years after burning (*6*). A similar percentage of survival on the burned areas at Onion Mountain would be sufficient to produce a dense stand of brush which would probably provide severe competition for conifer seedlings.

In resprouting brush types, germination of brush seedlings after burning would be no serious drawback. Brush seedlings would be killed by subsequent applications of herbicides required to kill the resprouting brush. This situation exists in the manzanita-ceanothus-live oak brush type at Onion Mountain, where most of the brush species have resprouted. Additional aerial applications of herbicides are planned before reforestation.

Brush burning may be undesirable, however, in areas occupied by susceptible, nonsprouting brush species that can be controlled with a single aerial application of herbicides. Use of fire to eradicate brush on such areas might stimulate germination of a new crop of brush seedlings, necessitating a second application of herbicides the following year. Reforestation would consequently have to be delayed for a year, unless the brush seedlings can be selectively controlled without damaging tree seedlings. As an alternative, seeding directly into sprayed brush may be feasible on some sites where mineral soil is not completely covered by a deep layer of duff and litter. Where brush removal is necessary before an area can be planted or seeded, mechanical eradication alone, or mechanical eradication after chemical brush control, may be more desirable than spraying and burning or eradication by burning alone.

Summary

Aerial application of herbicides shows promise as a method for controlling brush on extensive areas of forest land in southwestern Oregon. Before the sites can be reforested, prescribed burning may be necessary to remove the impenetrable mass of dead brush from the ground. However, burning may stimulate germination of dormant brush seeds in the soil and result in a dense stand of brush seedlings which might endanger survival of conifer plantations. This study was designed to learn whether controlled brush burning stimulates germination of brush seeds in the manzanita-ceanothus-live oak chaparral of the Siskiyou Mountains.

Both sprayed and unsprayed brushfields were burned. Large numbers of brush seedlings were found in the burned areas; relatively few in the unburned. Sampling at the first summer after burning showed that the burned areas contained an average of more than 10,000 new brush seedlings per acre. In contrast, only a few seedlings were found in a sprayed brushfield that was not burned and under untreated green brush in the vicinity.

Brush seedlings found on the burned areas were mostly mountain whitethorn ceanothus (87 percent) and greenleaf manzanita (12 percent). The remainder were hoary manzanita and buckbrush ceanothus (less than 1 percent combined).

Competition of brush developing from this source alone would probably endanger survival of conifer plantations established on burned brushfields in this brush association. However, where respraying is necessary to kill resprouting brush on the burned areas, the herbicides probably would also kill most of the brush seedlings.

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A Forester Looks at Lysimeters

James H. Patric

FOR MORE than two centuries lysimeters have been used widely in agricultural research. These soil-filled containers are well adapted to studies requiring a minimum of experimental variation: comparing crop responses to farm practices, measuring plant needs for water, or analyzing the percolate through soil-plant systems. Despite their usefulness in agriculture, lysimeters have found little use in forestry.

One reason is that plants grown in lysimeters tend to be smaller than those grown nearby under more natural conditions (*7*). Root systems cannot expand normally, a condition analogous to the root pruning used to produce dwarf trees. Further, the soil-air interface along lysimeter tank bottoms retards drainage, especially in small containers (*4*). Natural growing conditions are difficult to simulate for even a modest sized tree. And, of course, economics cannot be overlooked. Large lysimeters are expensive, and trees are a slow maturing, relatively low value crop. The upshot of these problems is the widely held view that results from experiments using containers cannot be applied directly to natural conditions (*6*). This paper reports studies which indicate that lysimeters can aid forestry research if application of the data is treated with due caution.

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The San Dimas Lysimeters

One of the largest lysimeter installations in existence is on the San Dimas Experimental Forest.[1] Its purpose is to measure the influence of pure stands of grass, chap-

[1]A field unit of the Pacific Southwest Forest and Range Expt. Sta. maintained by the Forest Service, U. S. Dept. Agric., in cooperation with the State of California, Department of Natural Resources, Division of Forestry.

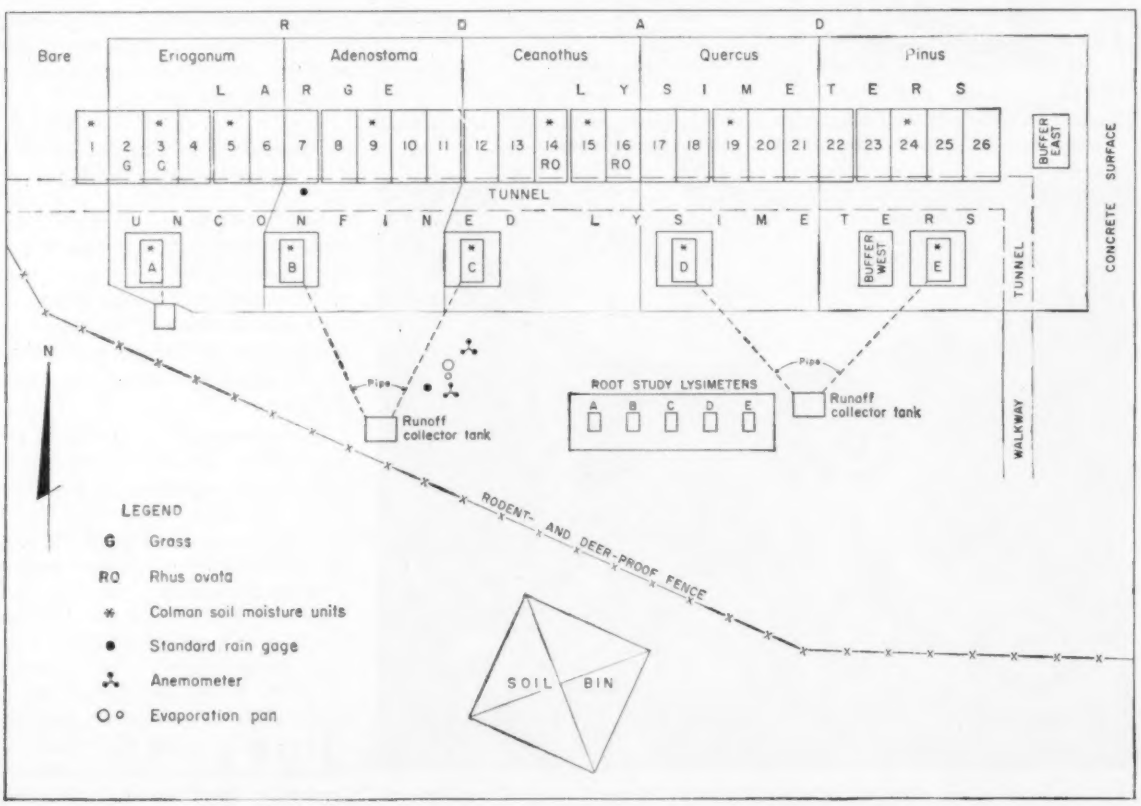

FIG. 1.—Plan of lysimeter arrangement at San Dimas Experimental Forest.

arral shrubs, and Coulter pines (*Pinus coulteri* D. Don) on the disposition of rainfall. Development of the San Dimas lysimeters has been described by Colman and Hamilton (*4*); a few other details will set the stage for comparing pine trees growing within and outside the lysimeters.

Construction was completed in 1938 and, after an 8-year calibration period, the permanent cover was planted about as shown in Figure 1. The arrangement of the lysimeters and their appurtenances was designed to minimize variation of all environmental influences other than vegetation. Even the soil was carefully standardized and so placed in the lysimeters as to eliminate profile variations. Each "key" lysimeter (starred in Fig 1) is considered to be a sampling unit of cover surrounded by a buffer zone of like vegetation. Key lysimeters also contain electrical soil moisture instruments (*3*) which permit tracing the movement of water within the soil block. The construction of the large lysimeters (Fig 2) also permits measurement of surface and bottom drainage in each unit.

The unconfined lysimeters (Fig. 1) are an attempt to bridge the gap between highly artificial conditions in the large lysimeters and a natural tree growing environment. They are pits 17½ feet square and 7 feet deep refilled with the standardized soil, a departure from conventional lysimeter design in that none have sides or a bottom. This device permits an evaluation of lysimeter-wall effects on plant growth. Colman instruments permit periodic measurements of soil moisture at several depths within and beneath the soil blocks to bedrock. Runoff from the soil surface (on a 5 percent slope in both types of lysimeter) can be caught for measurement.

A climatic station within the lysimeter enclosure records weather phenomena including temperature, humidity, wind movement, and rainfall. The climate is typically mediterranean with long, hot, virtually rainless summers and cool mild winters.

The pines were planted in 1946 and since then have received less rainfall than average in each year except 1951-1952 and 1957-1958. Average rainfall at the 2,800 feet lysimeter elevation is 27.8 inches per year, most of it occurring during the winter months, December through March.

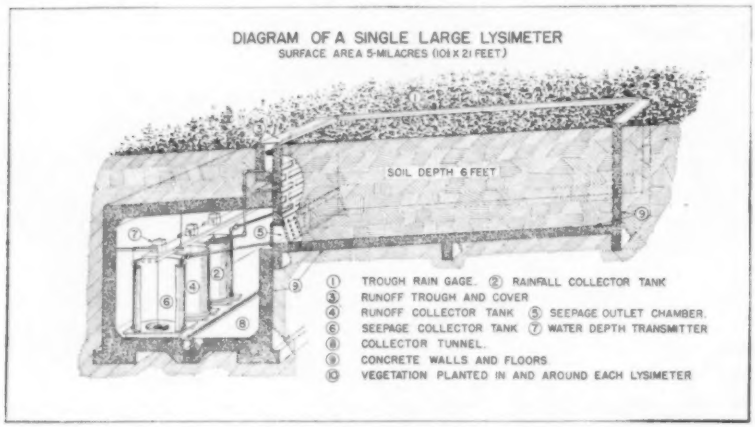
DIAGRAM OF A SINGLE LARGE LYSIMETER
SURFACE AREA 5-MILACRES (103 X 21 FEET)
SOIL DEPTH 6 FEET
① TROUGH RAIN GAGE. ② RAINFALL COLLECTOR TANK
③ RUNOFF TROUGH AND COVER
④ RUNOFF COLLECTOR TANK ⑤ SEEPAGE OUTLET CHAMBER.
⑥ SEEPAGE COLLECTOR TANK ⑦ WATER DEPTH TRANSMITTER
⑧ COLLECTOR TUNNEL.
⑨ CONCRETE WALLS AND FLOORS
⑩ VEGETATION PLANTED IN AND AROUND EACH LYSIMETER

FIG. 2.—Diagram of a single large lysimeter.

FIG. 3.—Coulter pine trees in lysimeters (center) are much smaller than those in buffer strips on either side. Trees outside lysimeters are only one year older but have unconfined root systems. Shrub in foreground is scrub oak (*Quercus dumosa* Nutt.). Midsummer 1959.

Responses of Pine Trees to Lysimeter Confinement

Readily apparent to most lysimeter visitors is the comparatively small size of Coulter pines growing on confined soil blocks (Fig. 3). Less conspicuous are differences between trees on the unconfined soil blocks and the surrounding buffer strips.

Variations in management do not account for obvious differences of tree size according to situation. There has been essentially no difference in management of the various planting sites. All were burned over in 1945 before planting with 1-0 stock in 2-inch auger holes on 1 × 1-foot spacing. Buffer strips were planted in 1945, the lysimeters in 1946. Watering, fertilizing, or other cultural treatment was considered unnecessary to produce the desired stand. Survival and growth were excellent, making drastic thinnings necessary in 1948 and 1952. These thinnings reduced trees per

lysimeter from 200 to 19. In 1956 the trees were again thinned to 8 stems per lysimeter on an approximate 6 × 6-foot spacing and the remaining stand was pruned of dead branches.

Tree growth was sampled on large and unconfined lysimeters and on the adjacent buffer strips. Samples on the large lysimeters consisted of all eight remaining trees. The sample on unconfined lysimeter "E" comprised the innermost of the 10 trees growing on that soil block. The two buffer strip samples were selected somewhat arbitrarily, these being groups apparently least influenced by edge effects.

Total height is the most apparent difference between trees on each siuation. By measuring intervals between branch whorls and whorl scars, annual height growth was established for each year since planting as 1-0 seedlings. These measurements show two remarkably consistent features: (1) average tree height always has been greatest on the unconfined lysimeter and least on the confined soil blocks. (2) the curves diverge from 1946 to 1953, and thereafter are virtually parallel (Fig. 4).

Pines on the unconfined lysimeters had several advantages. Infiltration of rainfall into the confined and unconfined soil blocks was practically identical during the period of record, but all confined soil blocks were dried to the wilting point each year. In contrast, unconfined lysimeters carried over soil moisture at lower depths after the heavy rains of 1951-1952 and 1957-1958 and also after the thinning of 1956. Presumably more soil moisture is available to trees having freely extended root systems, an hypothesis explaining the 1946 to 1953 divergence of height growth curves but not the nearly identical rates of increase thereafter during years of drought as well as a very wet year. Better site preparation in the unconfined lysimeters probably explains how trees on this surface quickly overcame the initial size advantage of trees planted one year earlier on the buffer strip. Lastly, trees in the buffer strip sample (west) probably are competing for moisture and nutrients with nearby, aggressive scrub oak. These observations lead to the conclusion that moisture availability limits height growth on all situations but that soil moisture shortages become critical soonest on the large lysimeters.

Needle lengths closely reflect extremes of rainfall on all situations (Fig. 5). Low rainfall in 1950-1951, 1952-1953, and 1958-1959 produced the shortest needles. High rainfall during 1951-1952 and 1957-1958 produced the longest needles. While collecting these data, I noted that most of the trees on lysimeters 23, 24, and 25 carried only 2 years' needle growth, that of the current and preceding year. In contrast, trees with unconfined root systems carried an accumulation of 3 to 5 years' green needles plus dead foliage retained from 2 or 3 previous years.

Competition also produced a response in needle length. After the thinning of 1948, crown closure caused diminished needle length during 1949-1950 even though an opposite effect was probable in response to increased rainfall of that year. The 1956 thinning lengthened most needles even though rainfall differed but little from that of the previous two years.

Correlation analysis shows clearly that needle length better reflects rainfall (and presumably other conditions influencing growth) than does annual height increment, the commonly accepted index of site quality. Correlation of needle length with rainfall was significant at the 1 percent level in the large lysimeters (Table 1). Annual height growth was not significantly correlated with rainfall. All correlations were strengthened when growing seasons after thinning were excluded

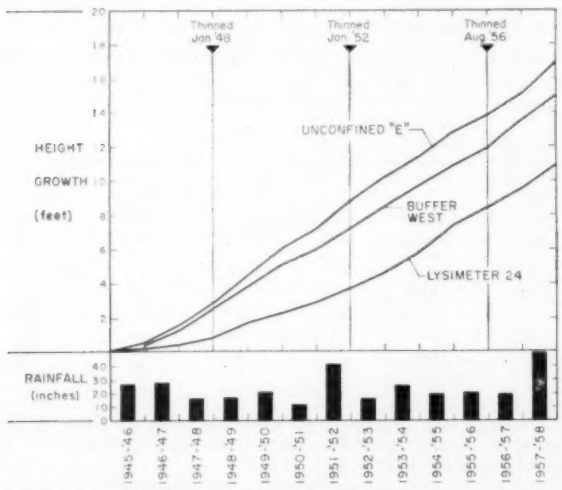

FIG. 4.—Cumulative mean annual height growth of pine trees.

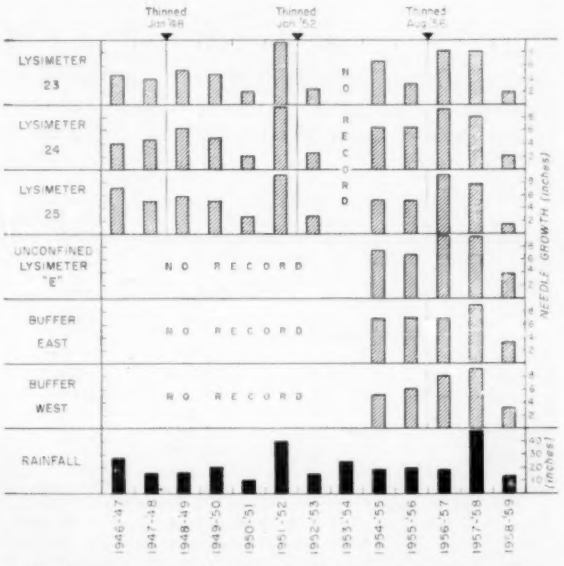

FIG. 5.—Effect of rainfall and thinning on needle growth.

TABLE 1.—CORRELATION COEFFICIENTS OF NEEDLE LENGTH[1] AND ANNUAL HEIGHT GROWTH WITH RAINFALL

Situation	Years of record[2]	Needle length (correlation coefficient)	Annual height (correlation coefficient)
Average of large lysimeters 23, 24, 25			
a. All years	12	.71**	.25
b. Years pines not thinned	10	.87**	.30
Unconfined lysimeter			
a. All years	5	.61	.33
b. Years pines not thinned	4	.85	.63
Buffer strip			
a. All years	5	.75	.28
b. Years pines not thinned	4	.88	.42

[1]Each year's needle lengths are averages of 20 randomly selected fascicles from branches high on the south side of dominant trees. The samples were in the summer of 1959. Needles were tallied according to annual increments found on selected branches. Needles of the 1959 season were ignored because they were not fully grown.

[2]The period of record for large lysimeters was more suited for this type of analysis than that for the unconfined lysimeter and buffer strip. However, correlation coefficients for the latter situations, despite the scanty record, follow closely the trend of those for the better documented large lysimeters.

**Significant at the 1 percent level.

from the calculation, an effect indicative of the influence of management on moisture availability. The thinning of 1952 was included in all calculations on the assumption that the heavy rainfall of that year assured near maximum needle growth regardless of management.

Generally decreased vigor of pines on lysimeters 23, 24, and 25 is indicated by several other bits of evidence. During high rainfall years needles were about equally long on all situations; in dry years needle lengths were shorter on all situations but much shorter on the large lysimeters, a condition indicative of the greater moisture stress in these pines. No cones were borne on trees in large lysimeters although cones have been borne for several years on adjacent taller trees with freely expanded root systems. Trees subject to adverse environmental conditions may not produce appreciable quantities of seed (*5*). Also, the trees in the large lysimeters are infected with *Lophodermium* spp., a fungus uncommon in southern California, and apparently not parasitic on neighboring trees. In Europe this disease is common in trees growing on poor sites (*1*).

Stem volumes (Table 2) clearly distinguish trees with confined root systems from those with freely expanded roots. Lysimeter walls have slowed growth of contained trees to about one-fourth that of trees assumed to have more widespread root systems. Apparently, the standardized soil in the unconfined lysimeter had no appreciable effect on tree growth. It is interesting to speculate as to why buffer strip trees decrease in size from east to west. The reason may be related to competition; the easternmost trees appear to enjoy an otherwise untapped source of water and nutrients stored beneath the nearby concreted surface (Fig. 1). The westernmost pines surely compete with the adjacent scrub oak for soil moisture and nutrients.

Grass yields from the San Dimas Experimental Forest's lysimeters also reflect confinement effects on contained plants (*9*). In general, the smaller the lysimeter, the more erratic the results and the less applicable they are to natural grass growing conditions.

Conclusion

The conclusion is inescapable that lysimeters are a poor place for raising trees. Is there, then, a place for lysimeters in forestry research? Undoubtedly there is, but data from such experiments must be treated with great caution. Even though the water table caused by the soil-air interface can be eliminated (*2*), the walls and bottom inevitably restrict normal development of widespreading root systems. Lysimeter results derived from trees will necessarily be based upon plants smaller and less vigorous than those expected to survive under natural competition.

Lysimeters may, however, adequately fulfill certain functions in forestry research. Probably no

TABLE 2.—STEM VOLUME DATA

Location	No. of trees	Height range	Avg. height	Diameter range[1]	Avg. diameter	Actual size of average tree		Form factor avg. tree[2]	Volume avg. tree
						Height	Diameter[1]		
		Feet	*Feet*	*Inches*	*Inches*	*Feet*	*Inches*		*Cubic feet*
Lysimeter 23	8	10.2-12.4	11.4	2.2-2.8	2.6	11.5	2.5	.40	.17
Lysimeter 24	8	9.6-12.8	10.9	2.0-2.6	2.3	10.9	2.2	.51	.15
Lysimeter 25	8	9.7-12.4	11.2	2.1-2.9	2.5	11.1	2.6	.39	.16
Buffer east	8	14.2-19.8	17.0	2.8-6.7	4.5	17.6	4.6	.39	.80
Unconfined "E"	8	13.9-18.9	16.5	2.4-5.3	4.0	17.5	3.4	.50	.77
Buffer west	8	11.1-16.9	14.7	2.5-5.2	4.1	14.8	4.4	.36	.57

[1]Diameters were not measured at the conventional d.b.h. point because this level occurred almost halfway up many of the stems. All diameters were measured 12 inches above the soil, a point apparently above the root-swell on these small trees. However, this low point of diameter measurement may account for unusually low form factors.

[2]There were no trees of average dimensions. Therefore, form factor was derived from the tree whose dimensions most nearly approached average for the sample group.

better way is presently known to determine or compare rates of water use by plants, including relatively small trees. They provide a convenient means for maintaining water tables in soils and for studying moisture or nutrient balances in soils growing trees. But from the data presented it must be concluded that lysimeter results are, at best, relative, and quantitative results should not be applied directly to natural forest conditions.

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OFFICIAL photograph of the first Florida Board of Registration for Foresters which will issue, effective January 1, 1962, certificates and titles to foresters qualified to practice in Florida shows:

Seated, *center*, board chairman Frank Albert of Jacksonville, manager of lands and forests for St. Regis Paper Company; *left*, H. B. Attaway, Jr., director of the Florida Forest Ranger School at Lake City, vice chairman; *right*, C. H. Coulter, Florida state forester, Board member and secretary. Standing, *left*, Board member George Mosely of Jacksonville, consulting forester and equipment dealer; and Board member Kenneth R. Swinford, member of the faculty of the Florida School of Forestry at Gainesville.

Specific Gravity of Shortleaf Pine and Loblolly Pine in Southern Illinois

A. R. Gilmore, G. E. Metcalf, and W. R. Boggess

SPECIFIC gravity has been used as an indirect measure of various properties of wood such as strength, paintability, glueability, and working characteristics (*3*). Also, pulp yields are directly related to specific gravity—the higher the specific gravity the greater will be the pulp yield (*3*).

Specific gravity was one of the characteristics studied in a survey of shortleaf pine (*Pinus echinata* Mill.) and loblolly pine (*Pinus taeda* L.) plantations in southern Illinois (shortleaf pine occurs naturally only as a few trees in the extreme southwestern part and loblolly pine is not native to Illinois). Since it was impractical to fell trees in each plantation, and obtain stem cross sections for specific gravity determinations, an alternate procedure was used to get indirect estimates of specific gravity.

Wahlgren and Fassnacht (*3*) found that a standard increment core, taken at breast height, could be used to estimate the average specific gravity of the merchantable portion of shortleaf and loblolly pines in Mississippi. The possibility of using increment cores to estimate tree specific gravity of these species in southern Illinois was explored and the results obtained are reported here.

Methods

Forty-seven shortleaf pine and 39 loblolly pine trees were used in the study. The sample trees were selected from 86 plantations located in 12 southern Illinois counties. The total height and d.b.h. of each sample tree was measured.

THE AUTHORS are members of the Department of Forestry and Dixon Springs Expt. Sta., University of Illinois, Urbana.

Increment cores were extracted from the sample trees with a 0.173-inch diameter increment borer at stump height (1 foot) and breast height (4.5 feet) and age was determined from ring counts made on the former. The length of each core was measured from the pith to the outside of the last growth ring to the nearest fiftieth of an inch, using a method devised by Boyce.[1] Specific gravities were computed on the basis of oven-dry weight and green volume.

The trees were then felled and cut into pulpwood lengths (5 feet 3 inches). A cross section of the stem at least one inch in thickness was taken at the top of the stump and at 5 feet-3 inch intervals to a 3-inch outside diameter top. Specific gravities for stem cross sections were determined by the green-volume displacement method described by Benson et al. (*1*).

Specific gravity of the merchantable portion of the tree, or "tree specific gravity," was computed by the method of Wahlgren and Fassnacht (*3*). Tree specific gravity is the average specific gravity for the cross sections of the bolts, weighted for proportional representation of the bolt volumes.

The variables tested in the regression analysis were:

1. Core specific gravity at 1 foot.
2. Core specific gravity at 4.5 feet.
3. Reciprocal of core specific gravity at 4.5 feet.
4. Average core specific gravity at 1 foot and 4.5 feet.
5. Product of core specific gravity at 1 foot and 4.5 feet.
6. Reciprocal of product of core specific gravity at 1 foot and 4.5 feet.

[1]Acknowledgment is made to Dr. Stephen G. Boyce, Carbondale Research Center, U. S. Forest Service, Carbondale, Ill., for his suggestions and assistance.

TABLE 1.— AVERAGES AND RANGES OF SPECIFIC GRAVITY OF INCREMENT CORES AND TREES IN SOUTHERN ILLINOIS AND MISSISSIPPI

	Shortleaf pine			Loblolly pine		
		Mississippi			Mississippi	
	Illinois[1]	Southern and central[2]	Entire state[3]	Illinois[4]	Southern and central[5]	Entire state[3]
Specific gravity						
Increment core at 1 foot						
Average	.477	.....	.....	.449	.....	.....
Minimum	.395	.....	.....	.404	.....	.....
Maximum	.544	.....	.....	.513	.....	.....
Increment core at 4.5 feet						
Average	.439	.509	.....	.419	.480	.....
Minimum	.368	.408	.....	.355	.382	.....
Maximum	.500	.641	.....	.485	.597	.....
Tree						
Average	.435	.472	.450	.416	.455	.433
Minimum	.362	.....	.....	.361	.....	.....
Maximum	.500	.....	.....	.473	.....	.....

[1]Ages ranged from 10 to 22 years.
[2]Data from Wahlgren and Fassnacht (*3*), ages ranged from 27 to 48 years.
[3]Data from Mitchell and Wheeler (*2*), median age of 10 years.
[4]Ages ranged from 9 to 28 years.
[5]Ages ranged from 18 to 51 years.

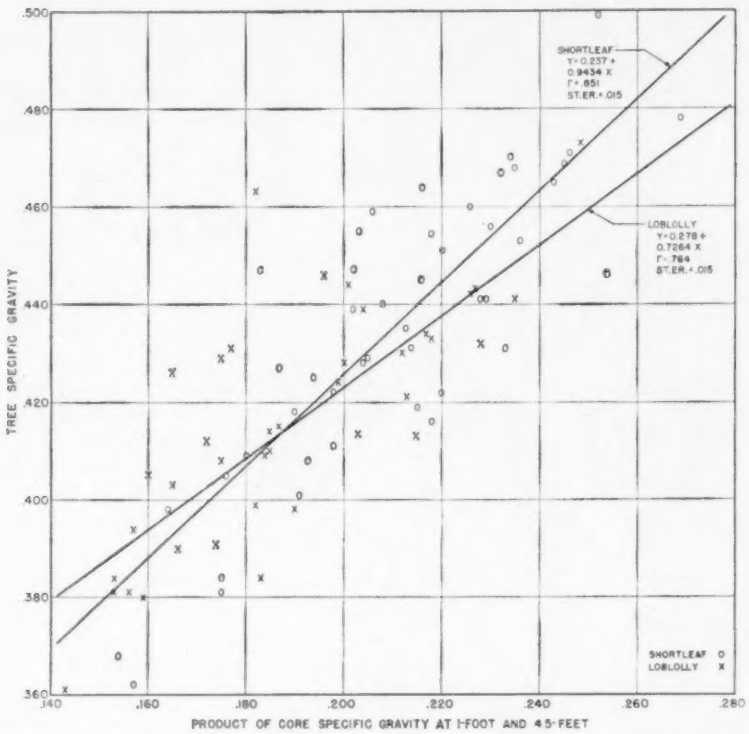

FIG. 1.—Regression of tree specific gravity on product of specific gravity of increment cores at 1 foot and 4.5 feet.

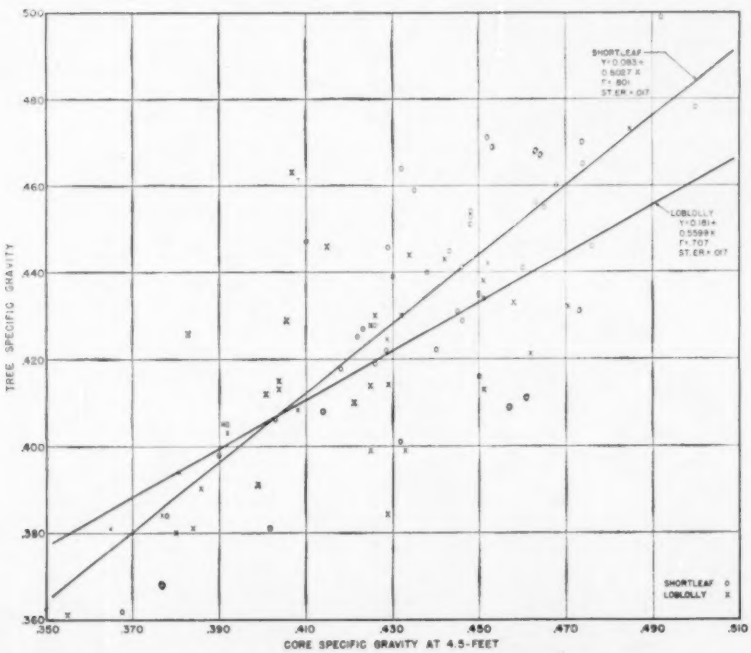

FIG. 2.—Regression of tree specific gravity on specific gravity of increment core at 4.5 feet.

7. Age.
8. Product of core specific gravity at 4.5 feet and age.
9. Diameter breast height.
10. Total height.
11. Tree specific gravity.

Results

Average age, d.b.h., and total height were 17 years, 5.6 inches, and 31 feet, respectively for shortleaf pine and 14 years, 6.1 inches, and 36 feet, respectively for loblolly pine.

The only variables that were significant when tested against tree specific gravity were the specific gravity of increment cores taken at 1 foot and 4.5 feet, and their products.

Averages and ranges of specific gravities for the increment cores and trees are shown in Table 1. Specific gravity of shortleaf pine averaged considerably higher (.435) than that of loblolly pine (.416).

Specific gravities were much lower for trees in Illinois than in Mississippi (Table 1). The maximum specific gravities for shortleaf and loblolly pines grown in Illinois barely exceed the mean of the Mississippi data.

Regression equations derived from the significant variables for both pines are shown in Table 2 and Figures 1 and 2. Regression of tree specific gravity on product of specific gravities for cores taken at 1 foot and 4.5 foot locations gave the best fit of the data. The correlation coefficient and standard error for this highly significant correlation was .851, .015, .764, and .015 for shortleaf pine and loblolly pine, respectively.

Discussion

The correlation coefficients of .851 and .764, relating the product of specific gravities for cores taken at 1 foot and 4.5 foot locations to tree specific gravity, for shortleaf pine and loblolly pine (Table 1) are better than those (.720 and .700) determined for the same species in Mississippi using only specific gravity of cores taken at d.b.h. To compute the unexplained variation in a regression analysis, the square of the correlation coefficient times 100 is substracted from 100

TABLE 2.—REGRESSION EQUATIONS, CORRELATION COEFFICIENTS, AND STANDARD ERRORS DERIVED FROM SIGNIFICANT VARIABLES

	Regression equation	Correlation[1] coefficient	Standard error of estimate
	Shortleaf pine		
Tree specific gravity on core specific gravity at 1 foot	$Y=0.165+0.6217X$	.745	.019
Tree specific gravity on core specific gravity at 4.5 feet	$Y=0.083+0.8027X$	.801	.017
Tree specific gravity on product of cores specific gravity at 1 foot and 4.5 feet	$Y=0.237+0.9434X$	.851	.015
	Loblolly pine		
Tree specific gravity on core specific gravity at 1 foot	$Y=0.166+0.5574X$	.723	.017
Tree specific gravity on core specific gravity at 4.5 feet	$Y=0.181+0.5599X$	.707	.017
Tree specific gravity on product of cores specific gravity at 1 foot and 4.5 feet	$Y=0.278+0.7264X$	.764	.015

[1]All correlations significant at 1 percent level.

TABLE 3.—WOOD YIELDS OF SHORTLEAF PINE AND LOBLOLLY PINE COMPUTED FROM AVERAGE TREE SPECIFIC GRAVITIES

	Shortleaf pine		Loblolly pine	
	Illinois	Mississippi[1]	Illinois	Mississippi[1]
Pounds per cubic foot, dry weight	27.2	29.5	26.0	28.4
Pounds per 90 cubic feet, dry weight	2448	2655	2340	2556
Difference between Illinois and Mississippi, dry pounds per cord[2]	.....	+207	.....	+216

[1]Average tree specific gravity from Wahlgren and Fassnacht (*3*).
[2]Ninety solid cubic feet per cord.

If this is done for the above data, it is found that the Illinois regression reduces the unexplained variation 20 percent for shortleaf pine and 9 percent for loblolly pine when compared to the Mississippi regressions. In the Illinois study the percentage of unexplained variation in the regression analysis was reduced 8 percent for both shortleaf pine and loblolly pine when the product of the cores specific gravities from stump height and breast height was used in the analysis instead of the single core taken at d.b.h.

This clearly demonstrates the advisability of using the product of the specific gravity of cores taken from two locations on the stem in preference to that of a single core if greater accuracy is desired. The question to be answered in any study is whether or not the increased precision is worth the extra effort required in taking the extra core, and the extra computations involved in this operation. Undoubtedly this increased precision would be worth the added effort in research projects. The possibility of taking more cores per tree should be investigated if even greater accuracy is desired.

The fact that the trees in Illinois were younger than those in southern and central Mississippi (Table 1) does not invalidate comparisons of data from the two states. Specific gravity values in Illinois are considerably lower than those reported by Mitchell and Wheeler (*2*) for trees throughout the state of Mississippi. In this case the Mississippi trees were younger than those in Illinois.

These data substantiate the work of Zobel and McElwee (*4*) who found that specific gravity of loblolly pine decreases as one goes northward or westward in the range of the species. This is demonstrated in lower specific gravities in northern Mississippi than in southern Mississippi (*3*) and in still lower values in southern Illinois.

The relationship between wood specific gravity and pulp yields has been emphasized. A comparison of the average specific gravities of the two pines obtained in this preliminary study in southern Illinois, shows that the pulp yield per unit volume for the two species is considerably lower in Illinois than in Mississippi (Table 3). This larger wood yield per cord in Mississippi of 207 pounds for shortleaf and 216 pounds for loblolly amounts to a considerable quantity of pulp for a mill that uses a large volume of wood. On this basis, assuming that a cord per acre per year is produced in both states, approximately 2⅛ tons less wood per acre is produced at pulpwood age (20 years) in Illinois than on a comparable acre in Mississippi.

Summary

An improvement of existing methods of estimating average specific gravity of standing shortleaf pine and loblolly pine from conventional increment cores is presented in this paper. A better estimate of tree specific gravity was obtained from the product of specific gravities for cores taken at 1 foot and 4.5 foot locations than for a single core at either location. Regression equations are given for the product of cores and for single cores.

The specific gravity of shortleaf pine and loblolly pine in southern Illinois was found to be lower than for these species in Mississippi. Wood yields computed from the average specific gravities are compared for the two species in southern Illinois and Mississippi.

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Notes & Observations

Season Influences the Amount of Backflash in a Red Pine Plantation[1]

The use of sodium arsenite as a silvicultural tool was started by Cope and Spaeth (*5*), and in recent years it has been rather widely used to kill and debark trees for pulpwood thinnings. At times the sodium arsenite is translocated through root grafts, and untreated trees, especially in pine plantations, are injured or killed. Such damage, known as "backflash," has resulted in the death of up to 20 percent of the residual trees in certain plantations (*4*). Even greater loss developed in one New Jersey plantation that was treated in May 1959; there thinning with sodium arsenite killed 50 percent of the residual trees.

After this damage, New Jersey foresters thought that the chance of similarly high losses precluded the use of sodium arsenite in thinning pine plantations unless ways of preventing it could be prescribed. Consequently, the study described in this report was made with the help of foresters of the New Jersey Department of Conservation and Economic Development. The experiment included three factors that might influence the incidence or amount of backflash: (1) month of year, (2) weather, and (3) quantity of material.

Study Area and Methods

The study was established in a red pine (*Pinus resinosa*) plantation in Stokes State Forest, Sussex County, New Jersey. This is an old-field site that had been planted with 2-1 stock on a 6×6-foot spacing in 1932. Now the pines are 35-40 feet tall, with diameters (b.h.) of 4-9 inches.

The soil is a well-drained sandy loam with sandstone and shale fragments throughout. There is no impediment to rooting in the top 3 feet.

A completely randomized factorial design using individual trees was the study design selected. The trees used were those that would come out in a thinning from below, plus the added criterion that each tree be separated by at least four untreated trees. From a table of random numbers 10 trees were placed in each of twelve treatments. These treatments included all combinations of three months (mid-April, May, and June), two types of weather (cloudy versus sunny and clear), and two methods of treatment. One was the hatchet-and-oilcan technique (*3*); the other, painting a girdle 4-6 inches wide. The latter used 3.5 to 4.5 times the amount of sodium arsenite as the former. Of course, air temperatures varied (from 56° to 75°F.) and were 1 to 15 degrees higher on clear days than on cloudy days. Relative humidities varied from 26 to 73 percent, and were 14 to 42 percent higher on cloudy days than on clear ones.

In July, 40 additional trees were treated to extend the test for another month. These trees were selected on the same plantation and on the same basis as the original 120. Hatchet-oilcan and painted girdle treatments (20 each) were randomized among these trees. Type of day was not tested in July.

Results

Within 2 weeks after a treatment, browning of needles was visible on both treated trees and on those damaged by backflash. Consequently, appraisal of results was possible during the same growing season.

In late August, 5 weeks after the last treatment, the amount of backflash was appraised. Only those trees with any needles entirely brown were considered to have been damaged by backflash, and each stem was assigned to the nearest treated tree. Trees were not included in the tally if only needle tips were brown; these trees will not be killed apparently. In the analysis and Table 1, however, the number of damaged trees above one per treated stem was disregarded; that is, a treated tree producing backflash on one untreated tree was given the same weight as one that backflashed to six stems

Of the three variables tested, only month of treatment gave a significant chi-square at the 5-percent level for the data used to construct Table 1. While the amount of backflash in May and June was appreciably less than in April, the July treatments caused even less damage: only 2 treated trees, or 10 percent, caused backflash in each method of application.

Trees damaged by backflash were larger than both treated trees and undamaged untreated stems. Average diameter of trees acted upon by backflash was 7.1 inches; of treated trees causing backflash, 5.8 inches; and of adjacent undamaged trees, 6.4 inches. Diameter differences between damaged adjacent

TABLE 1.—PROPORTION OF TREATED STEMS PRODUCING BACKFLASH ON AT LEAST ONE ADJACENT TREE

Month	Trees treated on cloudy days		Trees treated on clear days	
	By hatchet-oilcan technique	By painted girdle	By hatchet-oilcan technique	By painted girdle
	Percent			
April	100	80	90	80
May	50	70	40	40
June	40	50	50	70

[1]Paper of the Journal Series, New Jersey Agric. Expt. Sta., Rutgers University, the State University of New Jersey, Department of Forestry, New Brunswick.

trees and treated stems or undamaged trees were statistically significant in "t" tests at the 5-percent level.

The number of backflashed trees varied from 1 to 6 per treated stem, with an average of 1.45. The average was not significantly affected by any of the factors studied.

Discussion

These results indicate that amount of backflash is greatly influenced by month of treatment. When sodium arsenite is applied just before bud break or during the first 6 to 8 weeks of the growing season, unwanted damage will probably be high, one or more additional untreated trees being killed per treated stem. Conversely, either method of application on either cloudy or clear days will apparently cause considerably less damage in the latter part of the growing season. The mean for the April, May, and June treatments is 63.3 percent backflash, the July percent is 10.

The results substantiate the idea of parasitism suggested by Bormann and Graham (*1*). Apparently in this plantation, too, many of the largest trees were connected to the smallest ones by root grafts. Two of the grafts were excavated. These grafts, and the resulting parasitism, may be partly responsible for differences in size among individual trees in plantations on uniform sites. They may also account for the greater thinning response that Brown et al. (*2*) found in pure plantations than in mixed ones. In pure plantations there are probably more root grafts, so trees left in thinning can more quickly utilize moisture and nutrients from a large body of soil—through some use of the root systems of cut trees.

Summary

In a 1960 study of backflash in a 28-year-old red pine plantation, month of treatment was the only significant variable. Ten percent of the trees treated in July caused backflash on adjacent untreated trees, compared to 87.5 percent in April. Weather conditions and method of treatment (hatchet-and-oilcan technique versus painted girdles) had no appreciable influence. Trees damaged by backflash were significantly larger in diameter than either treated trees or undamaged trees.

Acknowledgments

The assistance and cooperation of the men at the Oak-Pine Research Center, Northeastern Forest Experiment Station, and the Forest Management Section, New Jersey Department of Conservation and Economic Development, are gratefully acknowledged.

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Observations on Inheritance of Wood Specific Gravity in Seedling Progeny of Loblolly Pine

Many of the desirable wood properties sought by various segments of the wood utilization industries are highly correlated with wood specific gravity. Within the past decade, concomitant with the general realization that trees possess heritable differences, a considerable amount of research has centered around this important wood characteristic. Although a considerable amount of work has been done on the amount of intraspecific variation present in wood specific gravity, the work reported here contains, perhaps, the first direct observations obtained on the inheritance of this wood characteristic in the seedling progeny of loblolly pine (*Pinus taeda* L.).

Previous studies conducted by Zobel and Rhodes[1] in East Texas resulted in the phenotypic selection of individual loblolly pine trees possessing the extremes of high and low wood density on the same site. Four of these selected trees were used in making the crosses for the present study. Three specific crosses, with reference to wood specific gravity, were made as follows: (1) high X high, (2) low X low, and (3) high X low. The same maternal parent was used in crosses 1 and 3, and the same paternal parent in crosses 2 and 3 (Table 1).

[1]Zobel, B. J., and R. R. Rhodes. Relationship of wood specific gravity in loblolly pine to growth and environmental factors. Tech. Note No. 11. Texas Forest Service. 32 pp. 1955.

Methods

Seed obtained from these crosses, along with wind-pollinated seed from two of the parent trees, were germinated and grown for one season in a greenhouse in a randomized block design with three replications for each cross or progeny group. The first year seedlings were grown in a fine sandy soil, in 2-gallon containers with 3 seedlings allocated to each container. Once each week the seedlings were watered with standard Hoagland's nutrient solution. At the end of the first growing season, all seedlings were transplanted to especially prepared standard nursery beds at the Indian Mound Nursery, Alto, Texas. The seedlings were planted, by hand, at a 1 X 1 foot spacing, in a randomized block design with three replications. Throughout the following spring and summer all seedlings received supplemental precipitation by overhead irrigation. The two-year-old seedlings when harvested for bole wood analyses

TABLE 1.—SUMMARY OF DATA ON PARENT TREES AND PROGENY, INCLUDING ANALYSES OF VARIANCE FOR ALL COMPARISONS

Comparison	Parents tree number and sp. gr.	Progeny mean sp. gr.	Number of seedlings	Analysis of variance: Source of variation	Mean square	F value	F.01
All crosses	B (.651) X15-39 (.580)	.389	150	Crosses	.039847	62.65	3.36
	B (.651) X14-21 (.465)	.369	100	Seedlings	.000636		
	15-50 (.491) X14-21 (.465)	.350	150				
	B (.651) X wind	.385	95				
	14-21 (.465) X wind	.356	150				
High X high and high X low	B (.651) X15-39 (.580)	.389	150	Crosses	.022265	35.01	6.70
	B (.651) X14-21 (.465)	.369	100	Seedlings	.000636[1]		
High X high and low X low	B (.651) X15-39 (.580)	.389	150	Crosses	.108871	171.18	6.70
	15-50 (.491) X14-21 (.465)	.350	150	Seedlings	.000636		
High X low and low X low	B (.651) X14-21 (.465)	.369	100	Crosses	.021290	33.47	6.70
	15-50 (.491) X14-21 (.465)	.350	150	Seedlings	.000636		
High X wind and low X wind	B (.651) X wind	.385	95	Crosses	.049687	78.12	6.70
	14-21 (.465) X wind	.356	150	Seedlings	.000636		

[1]The error mean square calculated for all crosses was used for the comparison between pairs of crosses. It is assumed that the sample error mean squares from the individual crosses estimate the same mean square as that of the square mean square computed for all the crosses. The latter estimate is used because it is assumed to be more accurate.

in December 1959 were exceedingly vigorous and had made excellent height and diameter growth.

A stem segment five centimeters in length was cut from the basal portion of the first extended growth flush of each seedling. The stem segments from crooked or deformed seedlings which possessed visible reaction wood were discarded in each progeny group. The bark was removed from each segment and specific gravity determined by the displacement method, i.e., loss of weight in water.

Results

Analysis of the data was designed to determine if (1) a significant difference existed among the progeny means of all crosses, and (2) whether there were significant differences between crosses in the following cross pairs:

(1) High X high and high X low
(2) High X high and low X low
(3) High X low and low X low
(4) High X wind and low X wind

Parent tree data, progeny specific gravity, and the analyses of variance are summarized in Table 1. All differences tested were significant at the 99 percent confidence level, and the ranking of the progeny groups was what one would expect on the assumption that wood specific gravity is under genetic control.

Discussion and Conclusion

The large F-ratios leave little doubt that the wood specific gravity of two-year-old seedlings reflects, to a high degree, the specific gravity of the parent tree wood. Our real interest, of course, is whether the mature wood that will be produced by comparable seedlings will show the same relationship. Zobel et al.[2] found a high correlation between specific gravity of loblolly pine core wood samples taken at breast height and specific gravity of the entire bole. These core wood samples contained from 7 to 11 rings and, therefore, are not equivalent to the two-year-old stem segments analyzed in the present study.

On the basis of Zobel's findings, however, one might suspect that the data presented here would be of some value in predicting the specific gravity of mature wood in trees obtained from the crosses tested. Until more precise relationships between seedling wood and mature wood are experimentally determined, such predictions are necessarily of questionable value. With this limitation in mind, the conclusions that may be validly drawn from this study are (1) that the progeny groups analyzed did inherit specific gravity differences corresponding approximately to the specific gravity differences between the parent trees, and (2) that selection of trees for high or low wood density appears, at present, to be feasible.

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[2]Zobel, Bruce, Charles Webb, and Fay Henson. Core or juvenile wood of loblolly and slash pine trees. Tappi 42(5):345-356. 1959.

Species Value Index

Anderson-Tully Company of Memphis, Tennessee, is one of the larger hardwood lumber producers, and has extensive timberland holdings under management. A small part of these lands is in cultivated fields, which are gradually being planted to hardwoods. We have also done some underplanting with hardwoods for several years, mostly in the larger openings behind logging operations. On each site, there is a choice of species which can be used. In timber marking, the alternative situations often involve a choice between species. We

TABLE 1.—SPECIES VALUE INDEX

Species in order of aver. annual diameter growth in inches		Species in order of aver. annual volume growth in board feet (Doyle)		Species in order of value of annual volume growth in dollars	
Cottonwood	.60	Cottonwood	17.4	Black walnut	$1.61
Willow	.54	Willow	14.7	Tulip poplar	.72
Cherrybark oak	.43	Cherrybark oak	10.5	Cottonwood	.70
Black walnut	.40	Tulip poplar	10.3	Willow	.56
Nuttall oak	.40	Sycamore	9.2	Cherrybark oak	.42
Tulip poplar	.38	White oak	9.0	Green ash	.40
White oak	.37	Black walnut	8.7	White oak	.36
Pecan	.35	Nuttall oak	8.7	Nuttall oak	.35
Sycamore	.35	Pecan	8.5	Sycamore	.34
Soft maples	.35	Sweetgum	7.8	Sweetgum	.31
Soft elms	.33	Soft elms	7.2	Soft maples	.30
Sweetgum	.29	Cypress	7.0	Pecan	.26
Cypress	.26	Soft maples	6.3	Cypress	.25
Green ash	.23	Green ash	5.7	Soft elms	.22
Honeylocust	.22	Honeylocust	4.8	Hackberry	.20
Overcup oak	.22	Overcup oak	4.8	Overcup oak	.19
Hackberry	.21	Hackberry	4.0	Hickories	.11
Hickories	.20	Hickories	3.8	Honeylocust	.10

TABLE 2.—SCIENTIFIC NAMES OF SPECIES

Species	Scientific name
Black walnut	*Juglans nigra*
Cherrybark oak	*Q. falcata* var. *pagodaefolia*
Cottonwood	*Populus deltoides*
Cypress	*Taxodium distichum*
Green ash	*Fraxinus pennsylvanica*
Hackberry (sugarberry)	*Celtis laevigata*
Hickories	*Carya tomentosa*
	Carya cordiformis
Honeylocust	*Gleditsia triacanthos*
Nuttall oak	*Quercus nuttallii*
Overcup oak	*Quercus lyrata*
Pecan	*Carya pecan*
Soft elms	*Ulmus rubra*
	Ulmus americana
Soft maples	*Acer rubrum*
	Acer saccharinum
Sweetgum	*Liquidambar styraciflua*
Sycamore	*Platanus occidentalis*
Tulip poplar	*Liriodendron tulipifera*
White oak	*Quercus alba*
Willow	*Salix nigra*

work with over forty hardwood species, and saw over twenty kinds of lumber. It is apparent that some species, like black walnut, have a high market value per unit of volume. Others, like cottonwood, with lower unit market value grow extremely well. The two variables of height and form are also important. A specific comparison of the relative values of species is desirable, and that is the purpose of the species value index concept.

Species value index is the dollar value of the annual growth per tree. In Duerr's financial maturity guides,[1] he presents a *tree* value index by d.b.h. and vigor class. This is intended, primarily, for a cut or leave decision on specific, individual trees. Many size-quality-use factors in hardwoods make financial maturity a somewhat elusive target. It is not clearcut by definition, since it is based on a rather arbitrary "alternate rate of return."

Species value index is a rule of thumb comparison of species with species. A d.b.h.(ib) of 24 inches is arbitrarily used as the diameter at maturity, which is the age to which annual growth is calculated. The loss of value due to this assumption should be small because of the relative nature of the index.

[1]Duerr, William A., John Fedkiw, and Sam Guttenberg. Financial maturity: a guide to profitable timber growing. U. S. Dept. Agric. Technical Bulletin No. 46. pp. 37-73. 1956.

Company timber is marked on a condition-vigor basis.

The assumed average annual diameter growth in the first column of Table 1, is shown for comparison of species, and is used to calculate age at 24 inches. Most of these measurements follow closely those published by Putnam et al.[2] Growth and form measurements for this calculation are from stands on average sites along the Mississippi River in northwestern Arkansas, southwestern Missouri, western Tennessee, and western Kentucky. Growth and volume figures are from stem analysis of logged-up trees, supplemented with increment borings and height measurements on standing trees. The merchantable volume of the average tree at 24 inches is divided by age to obtain the volume growth per year shown in the second column of Table 1. The value index in the third column was calculated by subtracting a logging and milling cost of $55 per thousand from the market value of the No. 1C, 4/4, air dried, rough lumber.[3]

Differences in species which affect logging and milling costs are not entered into here. There is no adjustment for differences in grade recovery by species. Plain sawn hardwood lumber is the only product considered. Veneer use would change the value of some species. Changing market prices make periodic calculation of the index desirable.

There is good separation, and the value for relative comparison should be worthwhile. It is not surprising that those species being planted by Anderson-Tully Company are at the top of the list, and those against which we discriminate, in timber marketing, are at the bottom. Note the change in relative position by species in the second column of Table 1, due to form and height growth, and again in the third column, due to the difference in lumber value.

[2]Putnam, John A., George M. Furnival, and J. S. McKnight. Management and inventory of southern hardwoods. Agriculture Handbook 181. Table 9. p. 82. 1960.

[3]Hardwood market report. Memphis, Tenn. December 1960.

Summary

Species value index is the dollar value of annual growth per tree to maturity. This calculation can be made for other groups of species in other areas. A specific comparison of these values can be valuable for planting plans, for timber marking guides, and for research fund or project priority.

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Points of View

Comments on "What About Farm Forestry 1961?"

I must agree almost 100 percent with Mr. John Preston's views concerning our progress in farm woodlot forestry.

Forestry on the farm cannot be accomplished on the basis of increased federal subsidies or a strictly commercial basis of infrequent stumpage sales, but a "do-it-yourself" forestry program can accomplish much. Although the management may not be ideal forestry, it will be better management that is now generally realized.

I think there are four prerequisites for a successful farm forestry program:

1. A local, dependable, and reliable market must be available. Without such a market a farmer cannot perform annual or periodic wood harvest. The farmer must be assured that he has a market and that he will receive a fair and immediate compensation for the wood when it is delivered . . . at whatever time of the year he has the time or wishes to sell a few cords, a few tons, or a few board feet of wood products.

2. There must be wholehearted support by industrial management. Without this support a forestry program cannot be established, let alone continue to grow.

3. There must be a re-orientation or re-education of the farm forester. Many farm foresters are prone to think that a stumpage sale is the only way to move timber. Many are strictly sawlog or veneer-oriented where markets for these products are often limited or nonexistent, overlooking the fact that size and quality alone are not the only factors in moving forest products. Many farm woodlots do not have or will not develop, within the owners' lifetime, trees suitable for these products. Often pulpwood, posts, staves, etc. can net the farmer equal or greater returns for delivered wood than will sawlogs. Here the stumpage fee can be retained by the farmer and he can realize a substantial return on his labor when other farm activities are at low ebb. (Here research could develop better adaptation of farm equipment for logging which need not greatly increase the farmer's investment for part-time logging.)

4. The state farm forestry organizations could well put increased emphasis in those areas in which industry is striving for good forest management, even to the point of moving additional foresters into an area. The usual practice is to promote or create other farm forestry projects where there is a lack of interest on the part of landowners and industry or there is a lack of suitable markets. Consolidate an area first—get better management going, then develop additional forestry project areas. The thinking seems to be—"Now that we have industrial foresters in the area, let them handle the job and we'll put our efforts in underdeveloped areas." It is one thing to manage 50,000 acres under one ownership and an entirely different situation to manage 50,000 acres under many and diverse ownerships. Farm forestry requires the complete cooperation of private and public forestry agencies.

These things I mention as a representative of an industry which is accomplishing a farm forestry program even though it is by no means the ultimate in forest management. This is accomplished by (1) contract preference to landowners enrolled under the forest industry sponsored Tree Farm Program or those whose lands are under the management of a professional forester—public or private, (2) a premium price for wood harvested under good forest practices, (3) the services of a professional forestry staff, and (4) the excellent cooperation with public foresters. The Society of American Foresters, in the guide to points of interest for the 1961 SAF national meeting lists Crandon Paper Mills, Fort Madison, Iowa, with the description—"Cooperative State Industry Forestry Program." This description was not furnished by Crandon and is, perhaps, indicative of our small measure of success.

To Mr. Preston's remarks that we need to educate the farmer, I would also add that we must educate industry and the farm forester too. I do not agree that we should make the farmer a subprofessional forester but educate him to take advantage of the many forestry services which are already available to him. His vocation is farming and we need only convince him that tree farming can be a worthwhile facet of his total farming operation.

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Book Reviews

Seeds: The Yearbook of Agriculture 1961

Edited by Alfred Stefferud. xiv +591 pp. Illus. Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. 1961. $2.

Many of the U. S. Department of Agriculture *Yearbooks* have become convenient reference books as well as winter reading for farmers. The present volume embraces the whole range of what is known about seeds, their life processes, commercial production, processing distribution, certification, and testing.

While setting forth the progress in knowledge of *how* seeds behave, the point is well taken that we still do not know *why* certain seeds react as they do. The chapter on "Light, Flowering and the Production of Seed" with an excellent exposition of photoperiodism illustrates the type of research that helps answer this question. No less penetrating are the following chapters on Temperature, Growth Regulators, Dormancy, and After-Ripening. These under the general heading of "Life Processes of Seeds" are of special interest to the forester. Not only are examples of tree seeds cited, but the discussion often applies equally to tree seeds as other classes of seeds. Other sections of general interest include well-illustrated chapters on drying and cleaning seeds, insect and disease transmission by seeds and how to prevent it, and comprehensive chapters on testing. All these make the book a useful reference. It is no small task to put together 78 chapters, involving almost twice that number of authors, into anything approaching a unified whole. High praise is due the editors for this feat. Many line drawings (especially of seed cleaning machinery) and 44 pages of half tones in the center of the book (not included in numbered pages) are attractive features.

Forest tree seeds are by no means neglected. Had this volume appeared even 50 years ago, it is doubtful if they would have received even scant mention. H. A. Fowells of the Forest Service was a member of the editorial committee and while only three main chapters are devoted exclusively to forest tree seeds, considerable space is accorded tree seed in many others, and eleven of the fifteen pages of tables in the appendix are on tree seeds. Several chapters not devoted to tree seeds were written by foresters.

The chapters on tree seeds emphasize current activity in genetics and tree improvement. "Collecting and Handling" by Rudolf summarizes the usual methods for collection, extraction, cleaning, storage and pretreatment, but that on "Production of Seeds of Forest Trees" by Hoekstra, Merkel, and Powers of the Southeastern Station, deals largely with seed orchards and protection from insects and diseases. Fowells' chapter on "Making Better Forest Trees Available" summarizes some of the recent work in forest genetics. These two chapters appear to overlap in many respects, the first stressing seed production of improved seed and the latter some aspects of vegetative propagation, with a few remarks on how new hybrids may be distributed by the Forest Service. It seems as if these two chapters might better have combined. "Making Better Trees Available" is placed in the section entitled "The Certification of Seeds" but nothing on this subject is mentioned. In view of the long history of attempts at certification of forest tree seeds, and the notable progress made in the United States in recent years, it is unfortunate that this subject was not treated under the heading where the reader would expect it. Moreover an opportunity to assert the importance of tree seed certification was missed. The only chapter dealing specifically with seed certification fails to refer to tree seeds in any way. Strangely enough brief mention of this is buried in the chapter on Germination Tests (p. 439). "Laws that Pertain to Seeds" would also fit better in the section on certification.

The appendix tables on North American trees provide valuable reference material, but it is not clear why the first six pages on "seed characteristics" are followed by three more pages with almost the same type of data; in the first table scientific names in italics follow common names in parentheses, in conformity with standard practice elsewhere throughout the book; but in the last table these are given in Roman type in the center of the page. The only contribution of this latter table is that seed weights are expressed in number of seed per ounce instead of weight of 1,000 seed in grams; plus a column of "treatment recommended for germination." Since the first table devotes considerable column space to dormancy, there is no apparent reason why these tables could not have been combined.

Considering the space devoted to seed testing, it is unfortunate that tables showing the International Rules for seed testing were not given in the appendix.

A short list of publications contains many titles quite on the fringe of the main subject, such as Boyce's *Forest Pathology*, but is at the same time quite inadequate to cover the subject of seeds. A glossary of seed and botanical terms and a subject index complete the book. Librarians will welcome the 1¼-inch thickness. Many earlier *Yearbooks* with less content occupy twice the shelf space. The book is well printed in easy-to-read double column.

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Forest Entomology

By T. O. Thatcher. 225 pp. Illus. Burgess Publishing Company, Minneapolis, Minn. 1961. $4.50.

This work by Dr. Thatcher could be described as an outline of forest entomology because most phases of the subject are discussed to some degree. The text can be quickly read and understood by the nonprofessional individual and there is enough material on insect structure and taxonomy so that a person with no knowledge of entomology could use the book as a guide. When the length of the text and the number of exercises (8) in the accompanying laboratory manual[1] are considered one appreciates the fact that this text and manual were designed for use in a quarter system. There is not enough material for a semester course.

The basic text is marred with numerous errors. I found misspelled words, poor punctuation, cumbersome sentences, and even incomplete sentences. These errors and the frequently confusing sentences detract from many of the discussions.

The arrangement and organization of the chapters has been handled very well. The author commences with a study of insects, their structure, ecology, and taxonomy, and logically ends the main text with a chapter on application of control. After this he adds an additional chapter entitled "Example Life Histories of Forest Insects." The usefulness of the final chapter is questionable because there is no attempt to include more than a sampling of insects. One would not use the chapter for life cycle reference purposes because there are many sources that are more complete, nor would he use it in the study of insect ecology because the discussions of the individual insects do not include much material on the subject.

Chapter 3 on Insect Structure includes a review of both external and internal anatomy. My main criticism concerns the extreme detail in which some structures are described and the lack of detail on other equally important phases. Since this book is used in a course that is usually the only training in entomology required of forestry students a more moderate coverage of insect structure might be desirable.

The discussion of ecology in chapter 5 was well done. This material will be interesting reading for anyone although more applied situations concerning current studies in forest insect ecology would have been valuable. The discussion in the following chapter on insect taxonomy has been handled well but the keys could be a part of the laboratory manual. This would allow more space for a more thorough discussion of the taxonomic groups of forest insects. The over-all subject of control is discussed in chapters 7 through 12. The subject and its many phases are covered in general terms in chapters 7 to 11. Then one might expect to learn how to control many specific forest insects in chapter 12, "Application of Control." One finds, instead of specific control procedures, a discussion of insect surveys and a very general discussion of control by chemicals and indirect means. A survey discussion is important to any forest insect text and rates a full chapter in most of them. The section on "Control Operations" gives very little that is applicable to the many specific insect problems that the forester may encounter.

This text and laboratory manual will be of use to instructors teaching forest entomology in a combined protection course or in the quarter system. The text is paperbound and should be much less expensive than it is. For a few dollars more one can purchase a much better text on general forest entomology and ecology in *Forest Entomology* by Graham, or a much better review of individual forest insects in *Forest and Shade Tree Entomology* by Anderson.

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[1]Thatcher, T. O. Laboratory exercises in forest entomology. Burgess Publishing Company, Minneapolis, Minn. 37 pp. Illus. 1961.

Weed Control: As A Science

By Glenn C. Klingman. Edited by Lyman J. Noordhoff. 421 pp. Illus. John Wiley & Sons, Inc., New York. 1961. $8.50.

Everybody having direct responsibility for soil and land management, whether it be porch box, garden, lawn, right-of-way, farm, lake, pond, range, or forest, has weed problems. A weed is most easily described as a plant in the wrong place. This book brings together most of the essential information for effective weed control.

The introductory chapter discusses types of weed damage, costs, history, general methods of weed control, and terminology used. The author says that, although weed control is as old as agriculture itself, it has advanced more since 1942 than in the previous 10,000 years and yet is still in its infancy compared to other agricultural developments. This situation may exist because few workers are actually engaged in weed control research and extension and because of the complexity of the subject. As an example, in 1954 weed control researchers totaled 125 compared with 4,500 in entomology; and state extension specialists in weed control were 8 compared with 70 in entomology.

The introduction is followed by 17 chapters on such subjects as dissemination of plants, plant physiology and herbicides, the soil and herbicides, surface active agents (wetting agents, emulsifiers, etc.), application equipment, and chemical formulations of the major herbicides. There are how-to-do-it chapters on field crops grown in rows, small grains and flax, small-seed legumes, vegetable and fruit crops, pasture and range, brush and undesirable trees, aquatic weeds, soil sterilants, and lawn and turf weeds.

The appendix contains a list of over 600 weeds (common and scientific names) with their tolerance to 2,4-D, 2,4,5-T, and 2,4,5-TP; also given are weights, measures, and other data useful for field managers.

Although this book was written primarily as a text for classroom

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instruction and was not intended to be a complete review of the literature, it is a valuable reference to all workers engaged in weed control research, extension work, and supervision of field operations. The material presented on chemical formulations of herbicides, petroleum oils, and plant physiology is essential knowledge for all workers engaged in weed control regardless of the type of weeds to be controlled. The chapters on aquatic and turf weeds help to make the book complete.

This book is written in a most readable manner. The sentences and paragraphs are concise and short, but still clear and understandable. The text is well balanced with graphs, photos, and other illustrations to help present the complex principles of scientific weed control.

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Principles of Plant Breeding

By R. W. Allard. 485 pp. Illus. John Wiley & Sons, Inc., New York. 1960. $9.

Although the author has written this book primarily as a text for undergraduate students in agriculture it will be found to serve as a useful reference for all plant breeders, including workers in tree improvement. Contrary to the design of other plant breeding texts, Allard's book places emphasis on basic principles rather than the methodology employed in the breeding of specific crops. The author assumes that the elementary facts and principles of genetics, as well as the important allied subjects of experimental design and biometry, are familiar to the reader. This has permitted amplification of such aspects of inheritance and variation as quantitative and population genetics, mating systems, heterosis, the genetics of pathogenic organisms, induced mutation, and other topics.

The subject matter is organized into nine major areas or sections, each of which is divided into chapters. Such a detailed segmentation, plus an effective index, makes the book especially useful for reference purposes. Tree breeders will find most chapters in the following sections of special interest: Section 4 (Genetic Basis of Breeding Cross-Pollinated Crops), Section 5 (Breeding Methods with Cross-Pollinated Crops), and Section 8 (Interspecific Hybridization). Workers in tree improvement programs concerned with breeding for disease resistance will find an up-to-date discussion of variability systems in pathogenic fungi and variability in Disease Reaction of Host Species in Section 6.

The book is abundantly illustrated with line drawings, charts, graphs, and halftone photographs of good quality. A comprehensive glossary of technical terminology is a useful appendage.

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Audubon and His Journals

By J. J. Audubon. Edited by Maria Audubon. Two volumes. 1,100 pp. Illus. Dover Publications, Inc., New York. Paperbound, $4.

This review is not for the purpose of discussing the subject matter contained in Audubon's *Journals*. These *Journals* have been used for many years by working scientists, naturalists, and others since the original publication in 1897, and are well known. The important fact is that they are again available, and at a reasonable price, in an unabridged edition.

To refresh the memories of those who may not have had the opportunity to peruse the original works lately, the *Journals* consist of: (1) *The Missouri River Journals* (1843); (2) *The Labrador Journal* (1833); and (3) *The European Journals* (1826-29). These *Journals* tell of Audubon's encounters with frontier folk, Indian tribes, and contain hundreds of descriptions of the bird and animal life of the regions. The *European Journal* tells of Audubon's sudden rise to fame as the American backwoodsman.

To these *Journals*, Dover has added the famous "Episodes," 58 in number, which are in reality vividly written short stories of Audubon's experiences in backwoods living. These experiences reach from the Florida Keys to Labrador and in subjects from pitting wolves to squatters of the Mississippi.

Finally, the edition includes a biography of Audubon by his granddaughter.

Do not be misled by the quality of this paperbound edition. The Dover edition will stand many years of use. The paper is of the quality used in more expensive editions and the binding sewn in signatures. The books will open flat for easy reading without damage. Finally, the type is legible and margins sufficiently wide to permit cloth rebinding, should one feel this to be necessary.

For those of us who could not find the original edition, or afford one when we did, now is the time.

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Current Literature

Compiled by LOIS MCALLISTER, *Assistant Librarian, State University College of Forestry at Syracuse University*
Range Management Section Compiled by NELLIE G. LARSON, *Library, U. S. Department of Agriculture*

Checklist of the Vascular Plants of Onondaga County, New York. By M. E. Faust. 85 pp. 1961. Syracuse University Museum of Natural Science Bul. No. 9. Available from Author, Bacteriology and Botany Dept., Syracuse University, Syracuse 10, N. Y. 50 cents.

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Society Affairs

Officers and Council
1960-1961

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Meeting of the Council

The regular fall meeting of the Council was held on the morning of October 8 and the afternoon of October 11 in the Leamington Hotel, Minneapolis. Present were President C. A. Connaughton, Vice President H. J. Malsberger, and Council members B. E. Allen, W. C. Bramble, D. E. Clark, K. P. Davis, G. A. Garratt, W. D. Hagenstein, S. O. Heiberg, and R. J. Preston; together with Henry Clepper, executive secretary. C. L. Tebbe was absent.

Visiting Scientists Program

Mr. Garratt, adviser to the director (Henry Clepper) of the Visiting Scientists Program, reported as follows:

This program was made possible by a grant in 1960 to the Society by the National Science Foundation in the amount of $15,730.

Some 60 educational institutions offering a curriculum or course in forestry were invited to request a visiting forester-scientist for lectures to students, faculty, and the public.

In all, 53 visits were made by 16 forestry scientists to 46 different institutions.

The program is being continued during the academic year 1961-1962.

For background information readers are refererd to the JOURNAL OF FORESTRY for July 1960, page 576.

International Biological Project

The Society has received a request from the American Institute of Biological Sciences to endorse the proposed International Biological Project. This project would muster the support of the nations of the world in advancing understanding and knowledge of biological phenomena.

Specific activities of interest to foresters might include an international biological atlas with standardized vegetation mapping, a compilation of the experiences of countries with exotic tree species, an international forest type classification, a study of potential productivity of forest areas of the world, establishment of "banks" to preserve germ plasm of trees resistant to insects and diseases, development of effective worldwide quarantine regulations for trees and seeds, preparation of an international forest fungi type culture collection, and an international inventory of forest diseases.

On the recommendation of the SAF Committee on Forestry Research (George M. Jemison, chairman) and on a motion by Dr. Bramble, seconded by Mr. Garratt, the Council voted to endorse the IBP but without financial commitment.

Seed Certification

During recent years foresters, and some Sections of the SAF, have expressed opinions on the subject of legislation for the certification of forest tree seed.

At the request of President Connaughton, Paul O. Rudolf, chairman of the Division of Silviculture, presented on behalf of the Division the following report to the Council:

The resolutions of the Puget Sound Section and the Columbia River Section asked for the "participation of the Society on a national level in the forest tree seed certification and legislative programs being considered by the International Crop Improvement Association, Association of American Seed Control Officials, Northwest Forest Tree Seed Committee, and others, to accomplish the protection and furthering of the interest of professional foresters in tree seed.

Since 1960 the Seed Certification Subcommittee of the Committee on Forest Tree Improvement of the Division of Silviculture has been doing essentially what the resolution asks. (This subcommittee consists of men well qualified by training and experience in forest tree seed problems who represent the major geographic regions.) The Seed Certification Subcommittee has done the following:

(1) Conducted a survey of a good cross section of informed opinion throughout the United States and Canada on tree seed certification.

(2) Prepared a report based on this survey in which are given recommendations for certification standards for forest tree seed and recommending a "go-slow" attitude on legislation until foresters are better informed and time has been sufficient to develop certification policies.

(3) This report, widely distributed to agencies and individuals concerned with tree seed problems, was published in the September 1961 issue of the JOURNAL OF FORESTRY, pages 656-661.

(4) This report has been furnished to the ICIA Forest Tree Seed Committee and a SAF subcommittee member will discuss it with them at the annual ICIA meeting in October 1961. Indications are that the SAF recommendations are generally acceptable to ICIA.

(5) The Association of American Seed Control Officials' Flower, Tree and Shrub Committee has been advised of the general desire of foresters to "go slow" on tree seed legislation at this time. They have asked a member of the SAF Seed Certification Subcommittee to present a forester's viewpoint on tree seed legislation and control at their biennial meeting in September 1961.

(6) The Northwest Forest Tree Seed Committee does not, of course, operate on the national level. That committee has, however, received copies of the SAF Seed Certification Subcommittee report and we are kept informed of their activities.

In conclusion, it seems clear that:

(1) The SAF has been and is represented on a national level in tree seed certification and legislative matters by the Seed Certification Subcommittee.

(2) The situation is far from critical because (a) the minimum standards of ICIA have no force in the 45 states that have no tree seed laws, (b) the revision of the State Uniform Seed Law proposed by AASCO is not legislation but only provides a model for states that want to establish their own tree seed laws, and (c) the amendment to the Federal Seed Act proposed by AASCO would have no effect on domestic tree seeds in the 45 states that have no tree seed laws.

(3) The SAF Seed Certification Subcommittee should continue to keep abreast of developments, try to get reliable information to foresters on tree seed legislation and certification, and try to present professional foresters' viewpoints to other agencies concerned with tree seed problems.

On a motion by Prof. Heiberg, seconded by Dr. Bramble, the Council accepted with thanks and approved the foregoing report.

Foresters interested in this subject are urged to read the Report of a Study of Seed Certification by the SAF Committee on Forest Tree Improvement published in the JOURNAL OF FORESTRY for September 1961, pages 656-661.

Committee on Natural Areas

The Committee on Natural Areas (John F. Shanklin, chairman) proposed to the Council a statement of policy on the setting aside of privately owned lands as natural areas.

On a motion by Mr. Clark, seconded by Prof. Heiberg, the Council adopted the statement as SAF policy, as follows:

Statement of Policy Relative to the Setting Aside of Privately Owned Lands as Natural Areas

The Committee on Natural Areas recognizes that the largest remaining source of forest land in the nation for natural area consideration is undoubtedly in private ownership. The Committee and its Section liaison officers and other representatives of the Committee are required from time to time to discuss with owners of private lands the various ways that such lands might be set aside in perpetuity for the purposes of the natural area program. In order that there may be a common understanding of the Society's position with respect to private land acquisition or the setting aside of private land for the Society's objectives, the following guidelines have been formulated by the Committee on Natural Areas and were approved by the Council of the Society.

It is the expressed policy of the Society that:

1. It will not seek to acquire in the name of the Society any real property for natural area purposes.

2. In the case of property held by corporations or other well financed companies, partnerships, etc., it will suggest that said parties retain title and seek elimination or reduction of taxes for the property based on its being set aside for scientific research purposes.

3. In the case of property held by companies or individuals not able to assure permanence of protection in perpetuity, it will be suggested that endeavor be made for the transfer of title to an educational institution, preferably a forestry college, and with an endowment to assure the payment of necessary annual recurring maintenance expenses such as fire protection, posting, fence maintenance, etc.

It may also be suggested that conservation associations such as Nature Conservancy, the Audubon Society, or others may, under certain conditions, be utilized in lieu of educational institutions.

4. In those cases where it becomes desirable or mandatory to continue active Society supervision or guidance, it may be suggested that the Society be named in the endowment, will, or other legal document as the technical adviser for the management of the natural area.

5. In all cases, the private land owner shall, by covenant attached to the land or by Board of Directors action, by will, or other legal means, stipulate that the natural area will be maintained inviolate in its natural conditions. A reversionary clause may be inserted to provide for those situations in which the natural area stand has been completely destroyed by conditions outside the control of the managing agency.

At the request of Mr. Shanklin, who has served as chairman of the Committee on Natural Areas since its formation in 1947 and who had asked to be replaced, the Council, by motion of Mr. Hagenstein, seconded by Mr. Garratt, authorized the appointment of Donald W. Lynch as chairman. Dr. Lynch is assistant director of the Division of Forest Management Research, U. S. Forest Service, Washington, D. C.

Sesquicentennial Commission on the Public Domain

The General Land Office was established by Congress on April 25, 1812, for the purpose of disposing of the vast public domain as a revenue measure. The General Land Office and the Grazing Service were merged into a new Bureau of Land Management in 1946. Much of the public domain that was suited to economic development has been patented. Public domain land fit for cultivation is almost nonexistent now, and large-scale disposal is mostly a matter of history. The developments of the past 150 years have led to a new point of beginning at which we find ourselves today—multiple-use management of the public domain for the national benefit.

This concept was given force in the directive handed by President Kennedy to Secretary of the Interior Stewart L. Udall in his natural resources message of February 23, 1961. The 477,000,000 acres of vacant unappropriated, and unreserved public domain, the President asserted, constitute a "vital national reserve that should be devoted to productive use now and maintained for future generations."

In order to observe this 150th anniversary there has been created a Public Domain Sesquicentennial Commission. Its function is to help mobolize public interest and understanding of the need to support and expand multiple-use management of the national land reserve.

Serving on the Commission are representatives of 22 national societies and associations concerned with agricultural and natural resources. SAF Executive Secretary Henry Clepper is a member of the Steering Committee.

In order to help finance the work of the Commission, the Council authorized a contribution of $100 to the Steering Committee. This was on a motion by Dr. Preston, seconded by Mr. Hagenstein.

Committee for Advancement of Forestry Education

In behalf of the Committee for the Advancement of Forestry Education, Chairman F. H. Kaufert presented the following report:

1. On the basis of its 1961 review, the Committee for the Advancement of Forestry Education recommends continuation of the accredited status of the professional forestry education programs at the following 24 institutions:

Auburn, University of
California, University of
Colorado State University
Duke University
Florida, University of
Georgia, University of
Idaho, University of
Iowa State University
Louisiana State University
Maine, University of
Massachusetts, University of
Michigan State University
Michigan, University of
Minnesota, University of
Missouri, University of
Montana State University
New Hampshire, University of
North Carolina State College
Pennsylvania State University
Purdue University
Utah State University
Washington, University of
West Virginia University
Yale University

The program at Oregon State University was examined in 1960 and its accredited status was continued. The College of Forestry at Syracuse, N. Y. will be examined with the Middle States Association, November 12-15, 1961.

The Committee recommends that action be withheld on Michigan College of Mining and Technology and on Louisiana Polytechnic Institute until visitations can be made for further evaluation of the professional forestry programs of these institutions.

2. The Committee further recommends that the Council provide in its budget for the 1962 fiscal year sufficient funds to cover the cost of the following vistations:

Schools now accredited that will receive further examination:

Michigan College of Mining and Technology
Louisiana Polytechnic Institute

Accredited schools to be examined by regional college associations in 1961-1962, visitations in which the SAF participates:

College of Forestry at Syracuse, N. Y.
Georgia, University of
Florida, University of
Washington, University of

Schools not previously accredited that have requested accreditation examinations of their professional forestry education programs:

Washington State University
Clemson College

3. Finally, the Committee recommends that the Council approve one change in the present Bases for Accrediting Professional Forestry Education, this change to be made immediately effective. The change that should be made would add a sentence to (d) of General Principles. This section would then read: "(d) The Forestry Department, Division, School or College must have offered a program of instruction leading to a bachelor's or master's degree in professional forestry for at least five years before requesting an examination for accreditation. During the last two years of this five-year waiting period, the institution's program must meet the minimum accreditation standards then in effect."

On a motion by Mr. Clark, seconded by Mr. Hagenstein, the Council approved the recommendations and commended the Committee for its exellent work.

Planning Committee

A report on progress by the special Planning Committee, appointed by the Council May 10, 1960, was made by Chairman Lee M. James. He reported that the Committee has been meeting at the expense of the individual members, and requested the Council to authorize funds to enable the members to meet for two days during 1962.

On a motion by Dr. Preston, seconded by Mr. Clark, the Council voted to authorize the expenditure of an amount not to exceed $2,000, to be used to pay the expenses of those members unable to finance their own travel.

Seattle World's Fair in 1962

The following communication was sent to the Council by the Puget Sound Section (Gordon Grayum, chairman):

The Puget Sound Section has embarked on a program to develop in the minds of the public the importance of our nation's forest lands and the role the professional forester plays in managing them in the best long range interest of the public. We feel this offers great promise for a nationwide and continuing SAF activity.

To carry out such a program, we propose using initially the forthcoming World's Fair to be held in Seattle, April 21 through October 21, 1962 for a SAF exhibit to show the 10 million anticipated visitors that there is more to forestry than fighting fires and planting trees. We propose to feature "multiple use" as the theme.

We have outlined a comprehensive program including the exhibit at the Fair, tours to forests, signs along public roads to emphasize forestry activities complete with the SAF insignia, publicity, and encouragement of similar program activities by other Sections in their areas. The 22 Sections would be invited to participate in the World's Fair exhibit, both with materials and financial assistance.

We respectfully request that the Council endorse our program by giving its blessing and that it consider assisting financially because of the nationwide importance to our profession. We should appreciate greatly your adding this item to the Agenda for the Council meeting scheduled at Minneapolis on October 8, 1961.

On a motion by Mr. Hagenstein, seconded by Mr. Malsberger, the Council unanimously authorized payment of $1,000 to the Puget Sound Section, Seattle World's Fair Committee, for the purpose of providing educational displays and exhibits to acquaint visitors to the Fair with the profession of forestry; this amount to be returned to the Society in the event of the Section's inability to provide the exhibits as planned.

In addition, the Council commended the spirit and initiative of the Puget Sound Section in promoting action for forestry displays at the Fair.

SAF Meeting in 1965

In behalf of the Wisconsin-Michigan Section, Dr. Davis, retiring member of the Council and newly installed chairman of the Section, invited the Society to hold its meeting in Detroit in 1965.

On a motion by Mr. Allen, seconded by Mr. Hagenstein, the Council voted to accept the invitation. The dates of the meeting and the headquarters hotel will be announced later.

Joint CIF-SAF 1967 Meeting

In behalf of the Board of Directors of the Canadian Institute of Forestry, President Lowell Besley invited the Society to hold another joint SAF-CIF meeting in 1967. This year will mark the Centenary of Canadian Confederation. The CIF proposed that the meeting be held in Ottawa in the fall of 1967.

On a motion by Dr. Preston, seconded by Prof. Heiberg, the Council voted unanimously to accept the kind invitation.

Forthcoming Annual Meetings

Forthcoming annual meetings of the Society have now been scheduled as follows:

1962, October 21-24. Atlanta, Ga.
1963, October 20-23. Boston, Mass.
1964, October 11-14. Spokane, Wash.
1965, dates open. Detroit, Mich.
1966, dates open. City open (West Coast region).
1967, dates open. Ottawa, Ont. (Joint meeting with Canadian Institute of Forestry).

CIF Resolution of Thanks

In behalf of the Canadian Institute of Forestry, President Lowell Besley presented the following resolution of appreciation to the Council. It was received with thanks.

WHEREAS, This joint meeting has entailed special difficulties for both the hosts and their guests, and

WHEREAS, Both the American and Canadian members of the meeting committee and its subcommittees have carried an exceptionally heavy burden,

BE IT THEREFORE RESOLVED, That we acknowledge and record our very special debt of gratitude to all those who have worked so hard to make this meeting an outstanding success, particularly the members of the local Sec-

tions of the Society of American Foresters and the CIF Northwestern Ontario Section, and

BE IT FURTHER RESOLVED, That the President convey to the President of the Society of American Foresters our most sincere appreciation of the hospitality and gracious welcome extended to all of us by our American colleagues and their ladies.

Estimated Budget for 1962

The estimated income and expense for the fiscal year December 1, 1961-November 30, 1962 was reviewed by the Council. On a motion by Mr. Allen, seconded by Dr. Davis (constituting the Finance Committee), the budget was approved as presented.

It should be noted that, although an apparent deficit is possible, every effort will be made to keep expenditures within income.

Also on motion by Mr. Allen, seconded by Dr. Davis, the treasurer was authorized to invest income from bonds owned by the Society in insured building and loan accounts provided interest rates are favorable at the time.

SOCIETY OF AMERICAN FORESTERS
ESTIMATED BUDGET—1962

INCOME	
Dues	$137,000
Fees	1,000
Subscriptions and sales	13,500
Advertising	45,000
Miscellaneous income	3,500
Forestry Terminology	500
Misc. Society publications	1,000
Forestry Handbook	2,800
Interest and dividends	5,200
American Forestry	750
Forest Science (net)	1,000
	$211,250
EXPENSE	
Journal of Forestry	$ 59,100
Editor's expense	1,200
Salaries—editorial and advertising	31,445
Salaries—executive office	67,983
Advertising expense	4,000
Travel, officers	5,000
Postage	4,500
Telephone and telegraph	1,200
Rent	10,110
Multigraph and mimeograph	850
Miscellaneous printing	2,000
Office supplies	2,050
General expense	2,600
Depreciation	2,000
Retirement plan	1,142
Dues, affiliation, organization	60
Watershed Congress	100
Committee expense	2,100
Division expense	100
Grading schools	600
Council travel	2,000
Group Hospitalization	650
Social Security tax	1,900
Maintenance equipment	600
Miscellaneous	500
Contribution for Education survey	9,000
Contribution to Endowment fund	520
	$213,310

Endowment Fund

At the Council meeting of September 28, 1958 the Council authorized the appointment of a committee to undertake the creation of an endowment fund from which desirable Society projects might be financed. Subsequently, the goal established was $250,000, with Mr. Garratt as chairman of the Endowment Fund Committee.

At the recent Council meeting Mr. Garratt presented a "working plan" for the SAF endowment fund campaign. On a motion by Mr. Hagenstein, seconded by Mr. Clark, the Council approved the procedure outlined by Mr. Garratt.

It was further suggested that the chairman explain the program to the Section delegates at their 1962 meeting in Atlanta next October, and enlist their support.

Amendment of Bylaws on Corresponding Member Grade

Article III, Section 9 of the Constitution provides for the grade of Corresponding Member as follows:

Sec. 9. Corresponding Members shall be foresters who are not citizens or residents of the United States, its possessions, or Canada, but who have shown substantial interest in American forestry.

In the interest of clarification, the Committee on International Relations (V. L. Harper, chairman) suggested an amendment to the Bylaws that would further define the qualifications for this grade and establish procedure. The Committee's proposed amendment was referred to the Council Committee on Membership (B. E. Allen, chairman) which after revision submitted the following version. On a motion by Mr. Allen, seconded by Mr. Hagenstein, it was approved.

Requirements for Corresponding Membership

Persons, not citizens of the United States, its possessions, or Canada who are foresters and have shown substantial interest in United States forestry. Prospective members will be considered to be foresters if they have completed the forestry curriculum in an institution of University standing in their country and are actively engaged in forestry work.

Procedure

A nomination to the grade of Corresponding Member can be made by any Member or Fellow to the Council through the Executive Secretary. It shall be accompanied by or subsequently supported by the written endorsement of one additional professional forester. The nomination must be accompanied by a 100-word biographical statement which includes the candidate's age, professional education, present position, and forestry experience. The executive secretary may elect an applicant without further action by the Council as a whole.

Amendment of Bylaws on Honorary Member Grade

Article III, Section 10 of the Constitution provides for the grade of Honorary Member as follows:

Sec. 10. Honorary Members shall be (1) persons not foresters who have rendered distinguished service to forestry either in America or abroad, or (2) professional foresters of outstanding achievement whose field of work lies outside of, and who are not citizens of, the United States, its possessions, or Canada.

The Committee on International Relations, which by custom makes nominations to the Council for Honorary Members under (2) above, suggested an amendment to the Bylaws that would further define the qualifications for this grade and establish procedure.

On behalf of the Council Committee on Membership, Mr. Allen made a motion, seconded by Mr. Hagenstein, that the recommended Bylaw be adopted, substantially as prepared by the Committee, as follows:

Requirements for Honorary Membership.

There shall be two alternate qualifications for Honorary Membership.

Class A. Persons who are not professional foresters but who have made outstanding and well known contributions to forestry in America or abroad. Statesmen, conservationists, and civic leaders who have so contributed shall be eligible for this grade of membership. In general the American candidates should be

sufficiently outstanding that their contributions to forestry are known to the Council members of the Society; foreign candidates should be known to members of the Committee on International Relations.

Class B. Foresters from countries other than the U. S., its possessions, and Canada who have made outstanding professional contributions. These contributions should be recognized as outstanding by their peers and should be known to members of the Committee on International Relations.

Procedure

Nominations to the grade of Honorary Member can be made by any Member or Fellow of the Society with the written endorsement of additional six Members or Fellows and should be accompanied by a 200-word biographical sketch. Nominations of citizens of the U. S., its possessions, and Canada will be submitted to the Council through the Executive Secretary. Nominations of citizens of countries other than the U. S., its possessions, and Canada will be submitted to the Committee on International Relations. This committee will forward such nominations to the Council with its recommendation.

Honorary Member Elected

On the recommendation of the Committee on International Relations (V. L. Harper, chairman), and on a motion by Prof. Heiberg, seconded by Mr. Hagenstein, the Council elected Prof. Allesandro de Philippis of the University of Florence, Italy, an Honorary Member of the Society.

Assistant Executive Secretary

President Connaughton announced the appointment of John R. Meyering of the College of Forestry, Syracuse, N. Y., as assistant executive secretary, effective February 1, 1962.

Mr. Meyering's selection was by a special committee (President Connaughton, Vice President Malsberger, and Executive Secretary Clepper) designated by the Council for this purpose. On a motion by Prof. Heiberg, seconded by Mr. Hagenstein, the Council approved Mr. Meyering's appointment.

Council Policy Committee

At the meeting of the Council on April 20 and 21, 1961 a Committee on Policy composed of three Council members was authorized. Appointed to the Committee were G. A. Garratt, chairman; K. P. Davis, and W. D. Hagenstein.

In behalf of the Committee, Dr. Davis submitted a document on policy formulation. On a motion by Dr. Davis, seconded by Mr. Clark, the statement was approved in principle by the Council subject to final review and editing by the Committee.

The statement will be published later.

Miscellaneous

On a motion by Dr. Preston, seconded by Mr. Hagenstein, the Council unanimously approved the report of the Council meeting of April 20 and 21, 1961 as published in the JOURNAL OF FORESTRY for June 1961, pages 463-469.

Mr. Malsberger discussed the need for guidelines for estimates and goals of national future wood requirements. He then made a motion, seconded by Mr. Clark, that the Council request the Division of Economics and Policy to consider the proposal and make appropriate suggestions.

On a motion by Mr. Hagenstein, seconded by Prof. Heiberg, the recommendation of the Washington, D. C. Section's executive committee that the Division of Public Relations be reactivated was referred to the incoming Council.

On a motion by Mr. Allen, unanimously seconded and passed, Mr. Connaughton was thanked and commended for his able leadership and work as President during the past two years.

Conference of Council and Section Delegates

A business conference of the Council and Section delegates was held on the afternoon of October 8. President C. A. Connaughton welcomed the delegates and presided.

Four topics had been scheduled for discussion as follows:

1. The need for increased effort by the Society to publicize the profession.

Gordon G. Mark, vice chairman of the Washington (D. C.) Section, emphasized the need to get forestry accepted as a profession by informed people. He asserted that the stature of the forester in America does not compare with that in other nations. In behalf of the Section's executive committee he recommended a reactivation of the Division of Public Relations that had been discontinued by the Council in 1957. The Division, he suggested, would propose a public relations program to be carried out by the Sections and Chapters as well as by the national Society.

Gordon H. Grayum, chairman of the Puget Sound Section, proposed that the Council "expedite, on a national basis, a sustained educational campaign to develop in the public mind the importance of our nation's forest lands and the role the professional forester plays in properly managing them in the best long range interest of the public." After mentioning specific projects that might be included in such a campaign, he recommended the creation of a SAF Public Relations Fund to be financed by an annual assessment of $2 from each member. This proposal was referred to the incoming Council that will serve during the period 1962-1963.

Mr. Grayum also discussed Society participation in the Seattle World's Fair of 1962. On this matter the Council subsequently took action which is described in the report of the Council meeting elsewhere in this issue.

2. Proposed "ground rules" for the consideration of policy issues by the Society and the Sections.

K. P. Davis discussed this topic in behalf of the Council Committee on Policy of which he, together with G. A. Garratt, chairman, and W. D. Hagenstein, is a member. His draft of a statement on policy formulation was subsequently adopted in principle by the Council to be followed by editing and further review. It will be published in an early issue of the JOURNAL.

3. Participation by the Sections in high school career counselling. Nelson T. Samson, secretary-treasurer of the Gulf States Section, reported on career counselling activities by the Texas Chapter. The Chapter has a member-counsellor in each county who attends "career days" and provides speakers. He stated that every high school in East Texas (the forested portion) is visited annually.

M. L. Markell, Jr., chairman of the Ozark Section, described the certificate awarded to students in the Section for forestry activities.

Other Section delegates described work in career counselling, usually done through committees. Some provide, or are planning to provide, scholarships. It was the consensus that increased effort in career counselling is desirable, in view of the need of the profession, not for a numerical increase in the number of students, but for an increase in the scholastic quality of those wishing to enter forestry.

4. Progress in state registration and licensing.

Three states had enacted legislation for the registration and licensing of foresters prior to 1961: Alabama, Georgia, and Michigan. Two additional states passed such legislation in 1961: Florida and South Carolina.

A report on the South Carolina law was given by Marlin Bruner, vice chairman of the Appalachian Section. Credit for the law, he said, goes to the Foresters' Council of South Carolina, a group composed of foresters in public agencies, the forest industries, and

in consulting practice. A bill, drafted by the Council, was introduced into three legislative sessions (1959, 1960, and 1961) before it finally became law this year.

Donald D. Stevenson, past chairman of the Southeastern Section, explained the provisions of the Florida law. This law, as well as that of South Carolina, was reviewed in the JOURNAL OF FORESTRY for September 1961, pages 706-708.

D. P. Duncan, chairman of the Upper Mississippi Valley Section, discussed the bills introduced in the Minnesota legislature and answered questions relating to their failure to become law.

5. Improved Society communications.

President Connaughton reviewed briefly developments in improved Society communications, particularly in the JOURNAL OF FORESTRY, as a result of Council action taken at the meeting of April 20 and 21, 1961. D. E. Clark, chairman of the special Committee on Communications, restated the recommendations of the committee which had been distributed to the Sections and Chapters. With further reference to this topic, members are invited to read the report of Arthur B. Meyer, editor, published elsewhere in this issue.

The conference was adjourned with thanks by Mr. Connaughton for the splendid participation by the delegates. He announced that the several specific recommendations made during the conference would either be acted on by the present Council, or, if further time was needed for consideration, by the incoming Council.

Report of the President

Charles A. Connaughton

As the close of my term of office approaches, this is a fine opportunity to make some general observations on the operations of the SAF. Also, there are some specific events of the immediate past and projections for the future which should be described for you.

During my term as President I've had the usual opportunity to discuss the SAF and its operations with members in several localities. The coverage has not been as broad as I would have liked owing to my own limitations of time but, when supplemented by correspondence, a fair cross section has been obtained. Generally, I have found that the member who is concerned with the force and effect of the Society as a professional organization wants the organization to strengthen its action and sharpen its expression on major policy issues. I am glad to detect that this militant, crusading spirit is still present in the forestry profession.

Policy Action

Some of those who feel the Society should be more aggressive on major policy have specific areas in mind at the national level on which the Society should move aggressively. Others are inclined to inject local issues for consideration. Still others have no particular subjects in mind—they just want action.

This position of a significant portion of the membership has been considered carefully by your officers and the Council. It appears that two closely related efforts can most effectively strengthen our action in this area immediately. First, we need a strong organization at Chapter, Section, and national levels with regular discussion and action devoted to policy matters, particularly in local meetings. Second, we need well defined, open lines of communication between all levels.

As to the first point, the Society is continuing to re-emphasize a long-standing recommendation to the members that they organize in groups where effective discussions can occur. This is being improved primarily by the continuing expansion in the establishment of Chapters.

As for strengthening communications between the various levels, a special study of this was made by a Council committee. The report of this committee was discussed with Section delegates at our last annual meeting and the text of the report made available to Sections. A number of detailed suggestions were included—some of which I have been pleased to see implemented.

To strengthen further our communications, the Council authorized changes in the JOURNAL OF FORESTRY. One is the publication monthly of a double-page spread entitled "National Outlook." This is designed to report non-technical items of interest in the forestry field. The "National Outlook" has been published in the last few issues of the JOURNAL and if members have comments or suggestions, please direct them promptly to the editor or the executive secretary.

A second change in the JOURNAL to improve communications has been the addition of a section of letters. Of course, the JOURNAL has never been closed to letters but establishment of this special department formalizes presentation of ideas in this manner and should tend to encourage members to communicate more freely.

Further actions of the Council are pertinent to this point. For example, a committee has been authorized to concern itself with current issues in forest policy. The purpose of this committee is to bring the policy questions into focus with the membership and be sure that relevant information is available upon which Chapter, Section, and national discussions can be based as a prelude to Society action. George Garratt is chairman of this committee. Also, you will recall that time has been provided each of the last several years for policy discussions in the Society Affairs Section of annual meetings. This is continuing this year.

I want to point out in connection with discussions and action to strengthen the SAF position in forest policy matters that there has never been any inference on the part of the membership that our technical position or interest should be diminished. Instead, the consensus is that our professional interest and responsibilities include both technical and policy matters and the Society should so orient its efforts. This is the direction we are endeavoring to go.

Personnel Changes

As the Society moves forward, we always encounter our share of "ups and downs." I want to report one development that we will feel sharply in the negative sense and yet it is inevitable. I have reference to the impending retirement of Miss Audrey Warren. Miss Warren will close her period of serious and devoted service to the SAF within the next few days. She has been part of our growth and evolution since 1928 and all those having any contact with Society operations know the value of her service. I know that you join me in extending our sincere appreciation and our best wishes for the future.

Also, I want to recognize another retirement from the staff during the year—Lloyd Thorpe, advertising representative for the JOURNAL. In addition to handling his assigned responsibilities efficiently, Lloyd had a deep interest in Society affairs. We gratefully acknowledge this interest and his work.

Partly as a result of these two retirements and partly to meet the trend of the times, the Society office has

undergone some reorganization. To handle the duties involved under the general direction of the executive secretary, a business manager has been employed. He is Young Rainer, a native of Alabama and a forestry graduate of Auburn University. Rainer will be assisted in the advertising work on a part-time basis by Erle Kauffman, an old friend to many SAF members.

Also, in the personnel field, we are ready to announce the appointment of an assistant executive secretary. This position has been authorized for some time but for various reasons, including financing, we delayed the action to become effective January 1962. The Society is fortunate to obtain the service of John Meyering. We shall welcome him to the job and regret he is not here today.

I'm pleased to report that the Visiting Scientists Program, which is sponsored by a grant from the National Science Foundation to the Society, made a most successful start. Participating schools report that service rendered to them has been most satisfactory and we are urged to continue this program into the future. We propose to do so as long as we have a willing sponsor.

In reference to forest education, no annual report could be complete without special mention of the Accrediting Committee. This committee, under chairmanship of Frank Kaufert, has a difficult and tedious assignment. A large amount of contributed time is necessary. Regardless of these circumstances, the Committee faces its responsibilities and meets its deadline. Real credit is due the members involved.

Two Referenda

Of real importance in our Society affairs are two referenda to be held this fall by mail ballot. One is to determine the opinion of members on the procedure which should be used in the establishment of wilderness areas on federal lands. The question as presented will have a choice of two alternatives: whether wilderness areas should continue to be established as at present by executive order of the secretaries of the federal departments concerned or whether wilderness areas should be established by Congressional action. The other referendum is concerned with the persistent question of membership grades.

You, as well as all other members, should express your opinion on these matters. Also, I urge that each of us vote in the forthcoming election of officers and urge our associates to do likewise. The number of votes cast during recent elections is barely 50 percent of the total possible. This is not an acceptable record.

The Forester's Challenge

Early in my term of office I decided that I would describe to as many foresters as possible what appears to me to be the major problem facing the profession. I have done this and have had generally excellent response. However, at the risk of repetition for some of you, I would like to make a brief statement of this problem in these closing days of my term.

To me, the major problem facing our profession is the need to gain acceptance by the public that we, as foresters, are fit stewards to manage the forest land of this nation. Or, stated in reverse, the public does not feel that it can trust the management of the nation's forests to its foresters. You and I have not gained major public acceptance and we must do this.

The problem is now in sharp focus because as the population is increasing without increase in land area, more and more people are demanding that management of forest land be prescribed by other than foresters. Water users may prescribe forest land treatment; recreationists demand large classifications for this use; sportsmen insist on certain fish and game specifications; wood users want guarantees of their supplies and so the various pressures develop. The forester who has the direct responsibility for the management of land can easily be eliminated almost entirely from the decision-making process, leaving him only the job of day-to-day administration.

Local people, who know the forester well, may fully respect his ability and aptitudes but most of our population is so situated that intimate acquaintance with the forester or his practices is limited. As a result, when the majority decides, the forester on the ground may be bypassed. This applies to public and privately owned land alike and poses a problem to foresters in all branches of the profession.

I will not expand this further but will mention two actions which are timely from a Society standpoint. First, we, as a profession, must set our sights on high standards of land management and then see that they are attained. Compromise on land management standards to meet local situations and current problems must be held to a minimum. We must set high goals and reach them. In this respect, some goals that public clamor is demanding may well exceed those set by foresters today. This poses a real problem as the forester should be so far out in front in setting standards of wild land use that he is easily recognized and fully appreciated. The forestry profession simply cannot follow standards set by others and still maintain leadership in land management.

As a second action, the forester and the forestry profession must take aggressive steps to secure public acquaintance and acceptance of our abilities. Our profession, which includes only a minor fraction of one percent of our total population, has had a tremendous impact on the public mind. Frankly, however, this impact isn't nearly strong enough to achieve the goals that we know must be attained. We must gain wider general acquaintance of the profession and its achievements.

There are many ways to attain the acquaintance to which I refer. I have discussed some of these with the various Sections and I will not go into detail here. I am confident, though, that something which can be done in this direction is apparent to each of you. So, I suggest that we get busy individually and collectively. The area is big enough for all to find full freedom of action. Your future and the future of the profession is involved—"Let's not miss the boat" because of smug complacency.

Conclusion

In closing, I remind you that my term of office is drawing to a close. This meeting, therefore, affords an opportunity to express my real pleasure in serving our 13,840 members. Your confidence has been appreciated and your support has been firm. I assure you, moreover, that I also speak in this regard for the Council.

We shall now proceed with brief reports of standing committees. These reports will be followed by a general discussion of recreational impacts which include a number of items of current popular interest. Your participation in the discussions is desired. However, before proceeding to committee reports, I'm pleased to present our executive secretary for his report.

Report of the Executive Secretary

Henry Clepper

Income during the fiscal year (December 1, 1960—November 30, 1961) is expected to total approximately $203,000. Expenses during the same period are estimated at about $196,000. Our anticipated net profit for the year may total $7,000.

Income from members' dues continues to be our greatest source of revenue; it is estimated to be $131,000 for the current year.

The next largest source of income is from advertising. Gross revenue from advertising this year should be about $45,000.

During the year the Society received

two special grants from the National Science Foundation.

One was for $15,000 to conduct a visiting scientists program in forestry at our schools of forestry. All institutions offering programs in forestry were invited to participate. This grant has been renewed for the academic year 1962-1963.

The second NSF grant was for $10,000. It enabled the Society to pay the travel expenses of 14 forest-scientists to the meeting of the International Union of Forest Research Organizations held in Vienna, Austria, in September.

Membership as of September 30, 1961 totalled 13,841 by grades as follows: Fellows, 94; Members, 6,612; Junior Members, 4,931; Associate Members, 223; Affiliate Members, 1,017; Student Members, 763; Honorary Members, 16; Corresponding Members, 185.

We have exactly 600 more members as of this date than we had a year ago.

Frequently, I am asked how the Society has grown. The following membership figures may be of interest:

1961	13,841
1951	8,475
1941	4,711
1931	1,700

A study with promise of considerable interest and value to our profession will be undertaken this fall and winter to determine the number of professional foresters in the United States who are engaged in forestry practice or working in allied fields. This project has been approved by the SAF Council. The Council of Forestry School Executives has also endorsed it and has enlisted the cooperation of the forestry schools. We hope to publish the results of the study in the JOURNAL OF FORESTRY in the spring of 1962.

Report of the Editor

With the purpose of improving Society communications through existing SAF publications, the Council at its spring meeting authorized two new sections in the JOURNAL OF FORESTRY. They were to be started on a trial basis. The Council also instructed the editor to seek means of increasing the JOURNAL's coverage of forestry news.

The new sections are called "National Outlook" and "Letters." They were started with the July issue.

National Outlook seeks to present reports on forestry issues and policies, either crystallized or in the making, and also to briefly cover other matters of national interest. This section is made possible by the part-time employment of a reporter, to whose efforts Henry Clepper and I add ours. We do not envision this section as a hot-off-the-press report. Rather, we think it should be a roundup of reasonably current topics for foresters who may look to the JOURNAL to inform them. We have particularly in mind the busy field man whose avenues for acquiring such information may be restricted or who may not have time to follow half a dozen or more news sources. I hope the Council will see fit to continue this section as it has been well received to date and fills a definite need. We cannot fill this need through voluntary contributions, and at the present our regular staff does not have time to handle such a service without outside aid.

The section "Letters" was created to permit members to comment briefly on matters pertinent to the profession of forestry in general. It has not as yet been swamped with contributions. After what experience I have had in attending Section meetings this surprises me and I hereby invite members who have something to say to take pen in hand.

In bringing about any appreciable increase in forestry news and Society affairs we have to rely on volunteer help. Therefore the most promising plan seems to be to ask Section officers to give greater attention to the reporting of Society affairs and to ask the already overworked newsletter editors to consider themselves certified correspondents of the JOURNAL. There are many problems of timeliness, national interest, and duplication of coverage involved with publishing news items in the JOURNAL but we will bring about what improvement we can.

I should point out that we do not wish the JOURNAL to compete with the very worthwhile function of Section newsletters. Nevertheless, items of national interest can well be sent to the Washington office in greater volume than is done currently.

In asking for more communications from the Sections we are in turn going to try to reciprocate. We propose the issuance, when occasion demands, of a simple, inexpensive newsletter from the Washington office to the Section officers with copies enough for Chapter officers. The letter would not be a regular affair nor would it go to all members. It would cover spot news items of significance to the Society when they occurred. Further dissemination of the news would be up to the Section and Chapter officers.

The final subject I would touch on briefly is the perennial one of general interest material in the JOURNAL. Discussion I hear is usually confined to full-length articles. These, incidentally, take up about 40 percent of an issue. Can we assume that the remaining 60 percent meets the qualification to varying degrees?

Articles of obvious general appeal to all foresters regardless of the specialty of their work or its regional aspects are hard to secure. Henry Clepper and I, with occasional aid from readers, give considerable attention to soliciting them or to preparing them ourselves when we can find inspiration and time.

In this connection a special issue scheduled for early next year will be devoted to the subject of wild animal damage to forests and the production of combined wildlife and wood crops.

We will continue and intensify our efforts to secure more general interest articles. No one questions their suitability in the JOURNAL and I hope you may have observed at least a modest increase in their numbers during recent months.

Notwithstanding, I would feel derelict in my duty if I ignored the other side of the coin completely. Forestry is a composite of specialty subjects and regional subjects and it is the function of the JOURNAL to advance forestry knowledge. I do not believe anyone would seriously suggest that all articles in the JOURNAL should be of general interest. Neither can an individual expect more than a portion to meet his immediate needs.

In connection with this report I engaged in a nonscientific research project. I put myself back in Missouri as assistant in charge of farm forestry and state forest land. I then went through the 1961 JOURNAL from January through October. There were 86 articles published I can say without bias that 14 of them would have interested me as well as have informed me. Eight more, had I read them, would have had specific information of practical value to me in my work.

If that sounds as though I am congratulating the editor, I am not. I am pointing with pride to the associate editors, and the contributors, and the numerous others who make the JOURNAL possible.

ARTHUR B. MEYER

Report of the Editor of Forest Science

Sometimes it is satisfying to be able to report no change. In general, this is true of *Forest Science* over the past year, at least in outward appearance. Forty articles have been published in the last four numbers. This is about our yearly average. The number of

subscriptions has held fairly constant.

There are, however, some trends of which you should be informed. The first concerns the time it takes to publish articles. Analysis of the first three numbers of the current volume (Vol. 7) shows that for 33 articles and notes an average of almost 16 months elapsed between receipt of manuscript and publication of the paper. Of this total elapsed time, 7 months were spent in review and revision and 9, appropriately, in gestation following acceptance and awaiting the pages to be printed on. This 9-month period represents an increase of 3 months in the last couple of years. This may represent, in part, a softening on the part of the editor, who, nevertheless prefers to attribute it to other causes. I believe that the increasing volume of good publishable research in forestry is seeking an outlet. I believe our Society should consider what share it should assume of the responsibility for providing this outlet.

In order to think effectively about our activities in scientific publication, we should know not only what *Forest Science* looks like but who subscribes to it. F. H. Eyre has made two analyses of subscriptions, one for 1957 and one for 1961. These are as follows:

	1957	*1961*
U. S.	888	836
Canada	105	95
Foreign	215	284
	1208	1215

Trends for Canada and the U. S. are quite similar: slightly down. This is more than balanced by an increase in foreign subscriptions—a 33 percent increase to a total of 23 percent of our circulation. (With Canada this percentage is 31.) *Forest Science*, whatever our intentions, is an international journal, at least in circulation. Forthcoming numbers will show it is becoming international in content.

What we make of *Forest Science*, it seems to me, must depend largely on its circulation and usefulness in this country. Mr. Eyre's analysis of U. S. circulation is as follows:

	1957	*1961*
Individuals	634	501
Schools, libraries (including 45 industry subscriptions)	111	193
U. S. Gov't. and other public agencies	143	142

This shows that the decline in U. S. subscriptions is entirely the result of nonrenewals by individuals. More than 20 percent of our 1957 individual U. S. subscriptions were lost in four years.

Notwithstanding the loss in individual U. S. subscriptions those 501 subscribers represent the largest block of circulation. How does *Forest Science* serve them? How could it better serve them? The editors would be glad to hear.

In *Forest Science*, our Society has launched a leading world journal of forestry research. If this venture is to live up to its promise we need first to increase our circulation and then to increase the amount of material we publish each year. If we do not soon reverse the trend to longer delays in publication, *Forest Science* will cease to be the first choice of the authors of our best scientific forestry literature.

The circulation analysis and the fact no one is compelled to subscribe to *Forest Science* combine to make the challenge quite pointed. If you believe as I do, that a profession depends for its existence on advancing knowledge; if you believe, therefore, in the value of forestry research and its dissemination, you, as individuals, have an opportunity to make your belief effective.

JOHN W. DUFFIELD

Report of the Committee for the Advancement of Forestry Education

The Committee's 1960 report stated that the "Bases for Accrediting Professional Forestry Education" had been revised and that reaccreditation examinations of all U. S. accredited forestry schools was planned for 1961. The revised "Bases" together with some clarification material were sent all accredited U. S. forestry schools except Oregon State University and the State University College of Forestry at Syracuse. The forestry education program at Oregon State University was reaccredited in 1960 and re-examination of the College of Forestry at Syracuse in cooperation with the Middle States Association of Colleges and Secondary Schools is planned for November 1961.

Cooperation by all accredited schools in connection with the completion of the "Information Forms" was excellent and all schools had reported by May 1961. During the past summer Committee members studied these reports individually and Deans McCulloch and Wohletz spent two days giving special study to the material supplied. On the basis of this preliminary study and the questions raised by Committee members, the chairman in August prepared letters to institutions for which information was not complete or on which added information was considered necessary. All schools from which additional information was requested responded promptly. However, one school found the time available to supply this information too brief and has asked for more time. On October 5-6 the Committee met at this hotel and spent two very full days considering all of the information supplied and preparing recommendations to the Council of the Society.

Our recommendations to the Council are as follows:

(a) That the accredited status of a number of colleges, schools, departments and divisions of forestry be continued but that those of these institutions with definite weaknesses or deficiencies receive special letters and recommendations from the Council.

(b) That certain institutions be visited by Visiting Committees, composed of members of the Committee for the Advancement of Forestry Education and Society members designated by the Council, prior to arriving at a decision relative to the continued accreditation or withdrawal of accreditation for these institutions.

The Committee is happy to report that some of the accredited forestry schools have made excellent progress since the 1951 accreditation examination, and there are encouraging signs that professional forestry education is slowly achieving greater stature. There are still some institutions that have made relatively little progress, several having strengthened their programs only to the point of conforming to minimum standards. The Committee does not consider such minimum strengthening to constitute real progress. As Society members recognize, the Committee in the revision of the "Bases" in 1959-1960 gave greater emphasis and more credit to institutional status. On October 5-6 it gave additional consideration to this question. The Committee is convinced that professional forestry education today, and increasingly so in the future, can receive the attention and support it deserves only when programs are located at institutions of university caliber.

The Committee on October 5-6 also considered additional revisions, clarification and strengthening of the "Bases." One item to be recommended to the Council on Wednesday, October 11, is the early adoption of a requirement that institutions requesting accreditation examination must have met during the last two years of the five-year waiting period the minimum accreditation standards in effect during those two years.

Two institutions, Washington State University and Clemson College, have requested accreditation examinations of their professional forestry education programs. The Society will participate in the accreditation examination of the University of Georgia by the Southern Association of Colleges

and Secondary Schools, which is scheduled for November. Participation in this accreditation examination is in conformance with the policy of the Society to cooperate with the regional college associations in all examinations of institutions where accredited professional forestry education programs are located.

S. G. FONTANNA, C. M. KAUFMAN, W. F. MCCULLOCH, ERNEST WOHLETZ, F. H. KAUFERT, *Chairman*

Report of the Committee on International Relations

Last year I presented our final report on the Fifth World Forestry Congress itself. Today, I shall first report the progress in the publication of the Proceedings of the Congress.

Proceedings of the Fifth World Forestry Congress

The printing contract has been let to the National Publishing Company of Washington, D. C. Galley proofs of the first lot of manuscripts have been received and it is expected that the publication will go to press in February or March 1962. Distribution of the Proceedings should be made by September 1962 at the latest.

The Proceedings will include 449 technical papers in the language in which they were given together with an abstract in the other two official languages of the Congress. They will include in words and in pictures an account of the Congress activities and its principal accomplishments. To do this will require three volumes aggregating some 1,800 pages; 1,390 pages in English, 230 in French, and 180 in Spanish. Some 500 photographs, tables, graphs, and maps will also be included.

A vigorous sales-promotion campaign is already under way and we hope to sell at $25 per set a sufficient number of copies to permit the Congress to close its books "in the black." Those in attendance at this meeting who may be interested in purchasing a set of the Proceedings can find an informative brochure on a display table in the Information Area. Attached to the brochure is an order blank which can be filled in and, together with $25, can be given to the person in attendance at the Information Area.

Regional Committee on Forestry Research of the Latin American Forestry Commission (FAO)

The Regional Committee on Forestry Research of the Latin American Forestry Commission held its second session in Caracas, Venezuela, on March 27-29, 1961. Frank H. Wadsworth, director of the Institute of Tropical Forestry (Forest Service, U. S. Department of Agriculture) in Puerto Rico, and I represented the United States at the meeting. The purpose of this conference, attended by delegates from many of the Latin American countries, was to review research progress on regional problems of concern to Latin American countries and to chart the future work of the committee.

Prior to this session the Committee had three operating sections: tree planting, forest terminology, and utilization of tropical hardwoods. At the session two additional sections were established: a research evaluation section to stimulate Latin American countries to do more research, and a section to explore the need for, and the feasibility of maintaining, a professional society of Latin American foresters.

North American Forestry Commission (FAO)

The first session of the North American Forestry Commission of the Food and Agriculture Organization of the United Nations was held in Mexico City from July 24-29, 1961. This inaugural session, under the chairmanship of Dr. Enrique Beltrán of Mexico, was devoted primarily to organizational problems and to outlining the kinds of activities to be undertaken during the next few years.

Delegations were present from the United States, Mexico, and Canada. Five delegates represented Canada; five were from the United States; and nine from Mexico. Sir Henry Beresford-Peirse, deputy director of FAO's Division of Forestry and Forest Products, and M. A. Huberman represented the FAO. The United States delegation included as delegate Richard E. McArdle, chief of the Forest Service, U. S. Department of Agriculture; alternate V. L. Harper, assistant chief, Forest Service; and as advisers Tom Gill, executive director, Charles Lathrop Pack Forestry Foundation; John Shanklin, staff assistant, forestry, Office of the Assistant Secretary, Department of the Interior; and James N. Diehl, director, Division of Cooperative Forest Fire Control, Forest Service, U. S. Department of Agriculture.

The session authorized the creation of two working groups as subsidiary bodies to the Commission, one on forest insects and diseases and the other on forest fires. The Commission also supported a proposal that Canada and the United States cooperate with FAO in its worldwide project of timber trends.

The next session of the Commission will be held in Canada in 1963. J. D. B. Harrison, deputy minister of forestry, Department of Forestry, Canada, was elected chairman and will serve until the end of the next session of the Commission

Second World Eucalyptus Conference

The United States was well represented at the Second World Eucalyptus Conference, which was held at São Paulo, Brazil, August 13-26, 1961. Present were Frank H. Wadsworth, director of the Institute of Tropical Forestry, Rio Piedras, Puerto Rico; Russell K. LeBarron, chief, Division of Forest Management Research, Pacific Southwest Forest and Range Experiment Station, Berkeley, California; Walter H. Hoffman, assistant general manager, Timber Products Division, Champion Paper and Fibre Company, Hamilton, Ohio; Elbert A. Schory, tropical forester, Florida Forest Service, Ft. Myers, Florida; Douglas M. Knudson, forestry specialist, Purdue University, ICA Cooperative Project, Viscosa, Minas Gerais, Brazil.

The Conference covered aspects of the planting, growing, harvesting, and utilization of eucalypts under conditions prevailing in various parts of the world where these species are grown. The conference concluded that eucalypts are important species for planting where rapid growth is of primary importance, and that they offer considerable promise in a number of areas of the world.

The Tenth Pacific Science Congress

The Tenth Pacific Science Congress met at the University of Hawaii, August 21—September 6, 1961. John A. Zivnuska, of the University of California, served as organizer of the Section of Forestry, which was subdivided into three Divisions: Forest Biology, Forest Management, and Forest Products.

Papers dealt with the organization and development of research in forestry in the Pacific region, including forest regeneration, forest biology, forest genetics, forest inventories, growth of forests, fire, and forest products utilization. Two weeks were devoted to the presentation of technical papers by representatives of some 18 countries. An additional week was devoted to four field trips.

Other members of the Society of American Foresters who had important roles in organizing the forestry sessions included Keith Arnold, director, Pacific Southwest Forest and Range Experiment Station; N. T. Mirov, Pacific Southwest Forest and Range Experiment Station; E. I. Kotok, for-

merly assistant chief in charge of research, U. S. Forest Service; and James L. Zeigler, the San Francisco representative of Arthur D. Little Company of Boston.

International Union of Forest Research Organizations

The XIIIth Congress of the International Union of Forest Research Organizations (IUFRO) was held in Austria during the period September 10-29, 1961. Meetings of the sections and committees of the Union were held in Vienna, September 10-17. Three field trips were arranged for the period September 18-29. The first emphasized silviculture and related disciplines; the second, forest protection; and the third, techniques in forestry operations, especially mechanical methods.

The U. S. delegation numbered 30 persons. I represented our delegation on the Permanent Committee of the Union. C. F. Korstian, the other U. S. member of the Permanent Committee, was unable to attend the Congress.

Eleventh Session of FAO Conference

The preparation of official position papers is under way for the 11th Session of the Conference of the Food and Agriculture Organization of the United Nations to be held in Rome, October 30-November 23, 1961. Richard E. McArdle and Robert K. Winters of the U. S. Forest Service and Henry Clepper, executive secretary of the Society of American Foresters, will serve as advisers to Assistant Secretary of Agriculture, John P. Duncan, head of the United States delegation.

Technical Assistance in Foreign Forestry

Individual members of the Society of American Foresters have contributed substantially to international forestry through their assistance in the training of foreign nationals who come to this country and in the acceptance of foreign assignments as forestry advisers in other countries.

Many foreign nationals come to the United States for forestry education or training without assistance of government agencies. The Forest Service does prepare education and training programs at the request of international agencies, foreign governments, and agencies of the U. S. Government. In 1960, 332 such programs were prepared for foreign nationals from 54 countries who came to the United States for study, observation, and on-the-job training in forestry and related fields. Most of these came under ICA sponsorship, but many came under the auspices of international organizations, foreign governments and, in a few instances, on their own initiative.

The training provided covered a wide variety of subjects including forest management, forest products utilization, watershed management, general forestry, forest economics, range management, forest engineering, and forest protection. Forty-three of the foreign nationals were scheduled to enroll in forestry colleges; 14 were candidates for the M.F. degree, eight for B.F., and 21 were nondegree candidates.

In addition, between 40 and 50 specialists in forestry and related disciplines are serving on overseas assignments as advisers to foreign governments in various fields of forestry. Most of these are serving with the International Cooperation Administration, but some are with the Food and Agriculture Organization of the United Nations.

Honorary Membership

At its meeting October 8, 1961, the SAF Council elected to Honorary Membership in the Society, Professor Alessandro de Philippis of the University of Florence, Florence, Italy. Professor de Philippis has had a long and illustrious career in forestry research in Italy, is director of the Agricultural and Forest Research Center, Rome, and is Section Leader in the International Union of Forest Research Organizations. He is the author of 100 papers on various subjects, and is a member of the Italian Academies of Agriculture, Forestry and Natural Sciences. He is also a member of the Forestry Societies of Switzerland and Israel.

V. L. HARPER, *Chairman*

Report of the Steering Committee: Study of Education In Forestry and Related Fields

The Study of Education in Forestry and Related Fields of Natural Resource Management was undertaken by the Society in 1958 pursuant to a grant of funds made to it by the Old Dominion Foundation. At the 60th annual meeting in Washington, last year, S. T. Dana, the director of the study, reviewed for you the progress that had been made up to that date. At the same time he presented for discussion by the Society a number of challenging issues which we face in education for our profession. During the months that have since elapsed, the study's report has been brought close to completion. It will lay out the facts of present day forestry education; it will appraise them in the light of the current long term outlook for the profession; it will formulate sharply the major issues which were raised a year ago; and it will analyze and recommend ways for dealing with them.

The director and some individuals from the Steering Committee have already conducted some review and informal discussion of the preliminary draft of this report. Within a few weeks its final chapter, including the important conclusions and recommendations, will be circulated to the Steering Committee, the heads of forestry schools, and some others for comment and criticism. Director Dana has advised the committee that he expects to have his report in its final form in our hands before the end of November.

Substantive comment on the report by the Steering Committee must, of course, await our examination of the completed manuscript next month. But the Committee looks forward to early completion of the study and to prompt publication of what it believes will be a major contribution by Dean Dana and his fellow workers to one of the Society's central and continuing objectives—the advancement of professional education.

HENRY J. VAUX, *Chairman*

Report of the Committee on Forestry Research

This is the second report of the committee which has been studying certain aspects of forestry research in the United States for about two years. Except for the data from state organizations, the statistical phase of the committee's work is completed. A 40-page preliminary draft of a report has been completed. This report was discussed by the members of the committee yesterday. It is hoped that a final report for publication can be completed within the next several months.

Some preliminary figures on expenditures for research by federal agencies and educational institutions were given in last year's report. We can now give you firm figures on research expenditures by federal agencies, forest industries, and schools. During the fiscal year 1959-1960, these expenditures were as follows:

Federal agencies $17 million.
Forest industries $62 million.
Educational institutions $6.5 million.
Ninety-six percent of the research

by the forest industries was in the field of forest products and utilization, and of this amount 70 percent was for research on pulp, paper, and fiber products. Expenditures by federal agencies and educational institutions follow a different pattern, 20 percent of the budget of federal agencies and 27 percent of the budgets of schools being spent on products and utilization research. Thirty percent of the expenditures by federal agencies and 33 percent of the expenditures by educational institutions were for timber production research. The schools were much more active in wildlife research, spending 16 percent of their budget for this purpose, whereas the federal agencies spent two percent of their funds in this field. This relatively large expenditure for wildlife research by the schools is brought about by the fact that several institutions support wildlife research centers, which are financed by institutional, state, and federal funds. Expenditures in other fields by federal agencies and the schools differed widely; for example, federal agencies spent 10 percent and the schools about two percent of their budget for watershed management research. The federal agencies spent 12 percent of their budget for economics research, while the schools spent six percent in this field. In the case of the Forest Service, a large portion of the funds spent for economics research was for the forest survey.

Sixty-nine percent of the expenditures for research at the educational institutions was at institutions with accredited forestry schools. At these institutions, considerable forestry research was carried on in the departments of soils, botany, zoology, agronomy, and agricultural economics. Approximately 20 percent of the total expenditures at these schools was in these related departments.

The development of research at educational institutions is indicated by the fact that in fiscal year 1959-1960, 22 of the 53 reporting institutions had budgets of $100,000 or more annually, whereas in fiscal year 1950-1951, nine years previously, only three schools had budgets of $60,000 or more annually, and only 18 had budgets of $20,000 or more annually.

The total of $85 million was spent by federal agencies, forest industries, and educational institutions in the fiscal year 1959-1960, compared with an expenditure of about $40 million in fiscal year 1952-1953. During this 7-year period, expenditures have increased 2.3, 2.7, and 2.2 times by private industry, U. S. Forest Service, and accredited forestry schools, respectively. Since 1959 the Forest Service has benefited from a more generous Congress. Increases in its research budget for fiscal years 1961 and 1962 were 29 and 43 percent respectively over the previous years. Considering increased costs of doing research, the $85 million would probably be the equivalent of about $55 million based on 1952-1953 costs. On this basis, the research support in 1959-1960 was approximately 1.4 times that in 1952-1953.

The relative inadequacy of the research support in forestry is indicated by the fact that only 0.34 percent of the gross national product contributed by the timber industry alone was spent on forestry research, as compared to 2.0 percent of the total gross national product for all types of research and development.

Other aspects of forestry research which were studied by the committee were: (1) problems of financing research at educational institutions, (2) the relative adequacy of research in various fields, (3) trends in basic research, (4) problems in graduate training for research, (5) the adequacy of modern facilities for research, and (6) the importance of coordination of research among various agencies. The final report of the committee will include information on all of these subjects and will also include the recommendations on each of these subjects.

GEORGE M. JEMISON
Chairman

Report of the Division of Forest Management

About 350 to 400 persons attended the October 10 meeting of the Division of Forest Management.

The morning session followed the printed program except that George S. Allen of the Weyerhaeuser Company served as symposium moderator in place of E. S. McKinnon, and Walter Tuttle of the British Columbia Forest Service delivered Alan Moss' paper for him, in his absence.

Richard L. Knox of the Minnesota Conservation Commission served as chairman of the afternoon session. Following the paper on a sampling design by Shiue and John, Thomas Evans of the U. S. Forest Service, Washington, D. C., made formal comments on it.

Interest in the day's session was heightened by the liberal use of visual aids, including stereo slides in the demonstration of defoliation by the spruce budworm.

Election of officers for 1962 resulted in the following:

Outgoing Chairman: Frank D. Irving, Jr., University of Minnesota, St. Paul, Minn.

Chairman: John C. Witherspoon, Southern Pulpwood Conservation Association, Atlanta, Ga.

Vice-Chairman: Warren T. Doolittle, Northeastern Forest Experiment Station, Upper Darby, Pa.

Secretary: Arthur Roe, Intermountain Forest and Range Experiment Station, Spokane, Wash.

John Carow, chairman of the Committee for the Study of the Standardization of the Cubic Foot Tree Measurement had the following report on committee work which was delivered to the Division by R. G. Belcher:

"The Committee for the Study of the Standardization of the Cubic Foot Tree Measurement has had but one meeting, with only three members present.

"However, a general plan of work and distribution of labor has been more or less formalized. The chairman, Dr. John Carow, goes on sabbatical leave during the second semester of this academic year, and will be able to initiate more widespread action then.

"In the meantime, the general plan of work will be circularized among the present members, and additional people will be approached to round out the committee and cover all parts of the continent."

WARREN T. DOOLITTLE
Secretary

Report of the Division of Forest Recreation

The Technical Session on Forest Recreation was held on the morning of October 10, 1961, with Chairman Henry Harrison presiding. A. B. Wheatley of the Ontario Department of Lands and Forests acted as co-chairman. Approximately 250 persons were in attendance.

In a paper entitled "Recreation and Land Ownership," Kenneth B. Pomeroy, chief forester of The American Forestry Association, stressed the following points:

1. It should be the national policy to leave in private ownership most forest land having reasonable prospect of effective management thereunder.

2. If public ownership becomes necessary in order to protect public interests, then the lower levels of government, particularly the states, should do more for themselves.

3. The basic differences between national parks and national forests are:

a. National parks are for the preservation of nature's masterpieces, unmarred by man.

b. National forests represent nature controlled by man. There land management for the economic good is the basic idea.

4. Historic standards for national parks require that they be spacious land areas so outstandingly superior in quality and beauty as to demand their preservation intact for the enjoyment and inspiration of future generations. Anything less would tend to downgrade the national parks system.

A panel discussion was conducted on the theme "Forest Recreation Moves Ahead." Speaking for the various classes of forest land ownership were:

"State Public Lands." H. G. Wilm, New York Conservation Department, Albany, N. Y.

"Industrial Forest Lands." A. V. Smyth, Weyerhaeuser Company, North Bend, Ore.

"National Forests." Richard J. Costley, U. S. Forest Service, Washington, D. C.

"National Parks." William L. Bowen, National Park Service, Washington, D. C.

"Forest Recreation Moves Ahead in Ontario." A. B. Wheatley, Ontario Department of Lands and Forests, Toronto, Ont.

The Division officers elected for 1962 were:

Chairman: Lemuel Garrison, Superintendent, Yellowstone National Park, Wyo.

Vice-Chairman: Neil Stout, Executive Director. New York Joint Legislative Committee on Natural Resources, Manlius, N. Y.

Secretary: Harry Camp. In charge of Forest Recreation Research, U. S. Forest Service, Washington 25, D. C.

Report of the Division of Forest-Wildlife Management

An average of 64 members attended the technical session which met on October 10 in Minneapolis. Chairman James P. Gilligan led the meeting, and the discussion of papers was led by A. T. Cringan (CIF), of the Ontario Agricultural College.

Following the technical session, including two papers by Canadians and three by Americans, a short business meeting was held at which officers were elected for the coming year.

Following its traditional practice of electing a new secretary and advancing the existing secretary and vice-chairman, the Division's newly installed officers are:

Chairman: Howard A. Miller, U. S. Forest Service, Atlanta, Ga.

Vice-Chairman: Richard J. Costley, U. S. Forest Service, Washington, D. C.

Secretary: Laurence E. Riordan, Colorado Game and Fish Commission, Denver, Colo.

RICHARD J. COSTLEY
Secretary

Report of the Division of Watershed Management

Paul Zinke, chairman, commenced the Watershed Management Division's eleventh annual meeting at 2 p.m., October 10, 1961. After making a short opening statement he introduced A. S. L. Barnes, Canadian Institute of Forestry, as cochairman, to the nearly 200 persons present. Mr. Barnes responded briefly. The following technical papers were then presented:

1. "Challenges and Opportunities in Watershed Management in the Lake States," by Sidney Weitzman, Lake States Forest Experiment Station, St. Paul, Minn.

2. "Watershed Management by Eastern Rockies Forest Conservation Board," by George Tunstell, Eastern Rockies Forest Conservation Board, Edmonton, Alta.

3. "Watershed Management in Ontario through Conservation Authorities," by A. S. L. Barnes and D. N. McMullen, Ontario Department of Commerce and Development, Toronto, Ont.

4. "Forest-Snow Relationships," by Bertram C. Goodell, Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colo.

5. "Managing the Forest for Soil Moisture Control," by Robert Zahner, School of Natural Resources, University of Michigan, Ann Arbor, Mich.

In a short business meeting at the end of the session, Chairman Zinke announced that the officers of the Division for the next year would be P. B. Rowe, *Chairman*; R. B. Marston, *Vice-Chairman*; and B. C. Goodell, *Secretary*.

R. B. MARSTON
Secretary

Report of the Division of Education

The Division of Education held its annual meeting on October 10, 1961. Approximately 190 members attended.

Introductory remarks were made by the cochairman of the meeting, John Carow (SAF) and K. G. Fensom (CIF), relative to the topic of discussion. Spirited discussion was conducted following each group of two papers.

Dr. T. D. Stevens, in commemoration of the 10th anniversary of the founding of the land grant colleges and universities, summarized in an exceptionally fine paper the contributions of those institutions.

In the absence of Seth Jackson, chairman of the Committee on Safety, the annual report of the committee was given by Dean Marckworth and accepted by the group. The major item was the publication of the Forester's Creed in the June 1961 issue of the JOURNAL.

Dr. William Bramble presented the report of the Nominating Committee. A single ballot was cast by the secretary at the direction of the group, for the nominees for chairman and vice-chairman. Ballots were distributed for selection of the new secretary. The Division officers for 1962 are:

Chairman: Allen W. Goodspeed, West Virginia University, Morgantown, W. Va.

Vice-Chairman: Harold E. Young, University of Maine, Orono, Maine.

Secretary: Carl H. Stoltenberg, Iowa State University, Ames, Iowa.

HAROLD E. YOUNG
Secretary

Report of the Division of Forest Fire

Pioneering events were the order of the day at the Technical Session on Forest Fire. This was the first full technical session on the problems of forest fire prevention and control to be sponsored jointly by the Society of American Foresters and the Canadian Institute of Forestry. It was the first meeting of the newly created SAF Division of Forest Fire.

The all-day session was opened by J. S. Barrows, chairman of the SAF Division of Forest Fire, who presented a resumé of goals and organization of the newly formed unit of the SAF. Chairman for the morning session was J. C. Macleod, associate director, Forest Research Branch, Canadian Department of Forestry. Four papers were presented as follows:

1. "Forest Fire Prevention—Progress and Prediction." Clare W. Hendee, U. S. Forest Service, Washington, D. C.

2. "An Industrial View of Forest Fire Control." Warren B. Gayle, Mac-

Millan, Bloedel and Powell River Company, Ltd., Vancouver, B. C.

3. "How Much Company Fire Protection on Company Land?" O. G. Traczewitz, Woodlands Department, International Paper Company, Mobile, Ala.

4. "Some Applications of Radio in Forest Fire Control." R. Hook, Saskatchewan Department of Natural Resources, Prince Albert, Sask.

The afternoon session was chairmanned by Carl C. Wilson, chief, Division of Forest Fire Research, Pacific Southwest Forest and Range Experiment Station. The papers presented were:

1. "Crown Fire Problems in the Lake States." John A. Beale, Wisconsin Conservation Department, Madison, Wis., and John H. Dieterich, Lake States Forest Experiment Station, St. Paul, Minn.

2. "Aircraft in Fire Control in Ontario." W. T. Foster, Ontario Department of Lands and Forests, Toronto, Ont.

3. "Applications of Fire Weather Service in Forest Fire Control." Dwight L. Phipps, Oregon State Board of Forestry, Salem, Ore.

4. "Crisis Periods and Fire Control Planning." Keith Arnold, Pacific Southwest Forest and Range Experiment Station, Berkeley, Calif.

At a business session, the following were elected Division officers:

Chairman: J. S. Barrows (reelected), chief, Division of Forest Fire Research, Intermountain Forest and Range Experiment Station, Missoula, Mont.

Vice-Chairman: John A. Beale, chief state forester, Wisconsin Conservation Department, Madison, Wis.

Secretary: Robert W. Cooper, Division of Forest Fire Research, Southeastern Forest and Range Experiment Station, Macon, Ga.

A report of the summer Fire Study conducted July 17 to August 11, 1961, at Woods Hole, Mass. by the National Academy of Science, National Research Council, was presented by A. A. Brown, director, Division of Forest Fire Research, U. S. Forest Service.

The Division voted in favor of joint sponsorship by the Society of American Foresters and the American Meteorological Society of a technical meeting on Forest Fire Meteorology. A joint committee will be appointed soon to start planning the location and program for the meeting. It is anticipated that the meeting will be held sometime in 1963.

Another pioneering event at the Forest Fire Technical Session was the preparation of a publications exhibit and a bibliography of fire publications issued during the last five years in the United States and Canada. The publication's activity for the SAF Division of Forest Fire was directed by John H. Dieterich, Lake States Forest Experiment Station.

Total attendance at the Forest Fire Technical Session was estimated at 350 persons.

J. S. BARROWS
Chairman

Report of the Division of Forest Products

The technical session of the Division was well attended considering the competition from the Divisions of Fire, Silviculture, and Economics. Approximately 200 CIF and SAF members attended.

Considerable interest was shown in the discussions on timber harvesting and forestry practices in Canada and the United States. Special interest in the motion picture, showing the pulpwood combine and the full-tree skidder developed by Canadian International Paper Company, made it necessary to run the film for a second time at the end of the session.

A short business meeting was held at the end of the session. Following officers were elected for a one-year term:

Chairman: Raymond J. Wood, Diamond Match Division, Diamond National Corporation, Cloquet, Minn.

Vice-Chairman: Herbert I. Winer, School of Forestry, Yale University, New Haven, Conn.

Secretary: John R. Cook, Jr., Southern Division, Scott Paper Co., Mobile, Ala.

The type of program followed by the Division was briefly discussed. It was agreed that future programs conform generally to the approach of this year's session covering the relationship of forest practices to the products of the forest. The new chairman asked that the members write him concerning new topics and any suggestions they have on subjects they would like to see included in next year's program.

In Mr. Lockard's absence, Mr. Erickson reported on the progress being made by the Committee on Log and Tree Grades. The syllabus published in the September issue of the JOURNAL was the result of this Committee's effort. Cooperative studies are being conducted toward arriving at a more simplified set of grade specifications. It is hoped that these will soon be ready for publication.

RAYMOND J. WOOD

Report of the Division of Silviculture

Approximately 250 members attended the morning and afternoon sessions of the Division of Silviculture held October 11. In accord with the general meeting theme "Forestry's Common Frontiers" the nine technical papers were of mixed CIF-SAF origin. They dealt with the general theme "Regeneration of Cutover Forest Lands." Co-chairmen P. O. Rudolf (SAF) and D. A. S. Dyer (CIF) presided at morning and afternoon sessions, respectively. Vice-Chairman K. F. Wenger chaired part of the morning session.

During a short business meeting, Professor D. M. Smith of Yale University was elected vice-chairman for 1962, and Mr. William R. Jordan, Wisconsin Conservation Department, secretary. Dr. Wenger succeeded to the chairmanship for the coming year; Professor Smith will do likewise next year.

Closing the meeting were excellent reports of the Committee on Natural Areas by John F. Shanklin, and the Committee on Forest Tree Improvement by Howard Kriebel. These reports follow.

WALTER L. BEERS, JR.
Secretary

Report of Committee on Natural Areas

We are nearing the end of the 15th year of the existence of the Committee on Natural Areas. This Committee was first organized in February 1947 as a committee of the whole Society, and then later assigned to the Division of Silviculture. Its first formal report was made to the Society at its regular annual meeting in Boston in 1948. A report has been made each subsequent year. This, then, is the 14th annual report of your Committee.

Liaison Officers

Again we have moved to strengthen our liaison with the Society's Sections. Dr. Laurence C. Walker, associate professor, research, George Foster Peabody School of Forestry, University of Georgia, now represents the Southeastern Section. Incidentally, Dr. Walker is doing an excellent job of following up on the Southeastern Survey on which I shall report in more detail. Then, for the newest Section of the Society, Alaska, Austin Helmers, of the Northern Forest Experiment Station, Juneau, has accepted the liai-

son assignment. There is considerable work ahead of Mr. Helmers in the Alaska Section.

Areas Approved

The following areas have been formally approved by the Committee since January 1, 1960, the cutoff date for the list of approved areas which was published in the JOURNAL OF FORESTRY, Volume 58, No. 11, November 1960:

Glen Helen Natural Area
Antioch College
Yellow Springs, Ohio
185 acres. SAF Type No. 52, white oak—red oak—hickory

Northern California Coast Range Preserve N. A.
Nature Conservancy
Mendocino County, California
The final area to be encompassed within this natural area has not yet been determined. However, the area protects SAF Type No. 229, Pacific Douglas-fir, Type No. 232, Redwood, and Type No. 234, Oak-Madrone

de la Howe Natural Area
John de la Howe School
McCormick County, South Carolina
100 acres. SAF Type No. 75, Shortleaf pine

Upper Olaa Forest Natural Area
Hawaii National Park
The final boundary of this natural area has not yet been designated by the National Park Service. It will, however, include approximately 500 acres of Ohia lehua and tree ferns

Sugar Loaf Mountain Natural Area
Hot Springs National Park, Arkansas
129 acres. SAF Type No. 75, Shortleaf pine

Mianus River Gorge Wildlife Refuge and Botanical Preserve
Nature Conservancy
Westchester County, New York
157 acres. SAF Type No. 24, Hemlock-yellow birch

Since arrival here Paul Dunn of the St. Regis Paper Company has advised that tentative approval has been given to setting aside some 20 acres of virgin longleaf pine within the Hauss Park Area, Alabama, as a natural area. This is very welcome news.

Southeastern Survey

You will recall that last year we completed a survey within the States of North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, and Tennessee to pinpoint examples of old growth or virgin forest stands which might be considered for permanent preservation within the Natural Area System. The survey disclosed that 29 areas were definitely suitable as natural areas and an additional 47 appeared to have great possibilities but needed further investigation.

Your Committee recognized and reported last year that a tremendous amount of work remained to be accomplished:

1. To obtain formal designation as a natural area for those areas definitely recommended for inclusion within the System, and

2. To complete the investigation of those areas requiring additional information.

The Southeastern survey covered a geographical region which encompasses, in whole or in part, four separate Sections of the Society. These are the Appalachian, Kentucky-Tennessee, Southeastern, and Gulf States Sections. Our problem was therefore placed in the hands of our liaison officers for those four Sections and I wish to take this opportunity to thank them for the amazing amount of work that they have accomplished. The Committee's thanks go to Tom Nelson of the Appalachian Section, L. P. Blackwell of the Gulf States Section, Royal E. Shanks of the Kentucky-Tennessee Section, and Laurence C. Walker of the Southeastern Section.

Their efforts are now beginning to show concrete results. We reported previously that the de la Howe Natural Area had been accepted. This is the first case to be completely consummated. There is every indication, however, that the report of this Committee next year will definitely show a considerable number of natural areas having been formally established in the Southeast.

One troublesome problem which the Committee had recognized in advance of the Southeastern survey has had to be placed before the Council of the Society for guidance. The largest remaining source of forest land in the nation for natural area consideration is undoubtedly in private ownership. The members of your national Committee, its Section liaison officers and other representatives of the Society are required from time to time to discuss with owners of private lands the various ways in which the lands might be set aside in perpetuity for the purposes of natural areas. In order that there might be a common understanding of the Society's position with respect to private land acquisition or the setting aside of private land for the natural area program, the following guidelines were formulated by the Committee and were approved by the Council on October 8, 1961. They are:

1. The Committee will not seek to acquire in the name of the Society any real property for natural area purposes.

2. In the case of property held by corporations or other well financed companies, partnerships, etc., the Committee will suggest that said parties retain title and seek elimination or reduction of taxes for the property based on its being set aside for scientific research purposes.

3. In the case of property held by companies or individuals not able to assure permanence of protection in perpetuity, the Committee will suggest that endeavor be made to transfer the title to an educational institution, preferably a forestry college, and with an endowment to assure the payment of necessary annual recurring maintenance expenses such as fire protection, posting, fence maintenance, etc.

The Committee may also suggest that conservation associations such as the Nature Conservancy, the Audubon Society or others may, under certain conditions, be utilized in lieu of educational institutions.

4. In those cases where it becomes desirable or mandatory to continue active Society supervision or guidance, the Committee may suggest that the Society be named in the endowment, will, or other legal document as the technical adviser for the management of the natural area.

5. In all cases, the private land owner shall, by covenant attached to the land or by board of directors action, by will or other legal means, stipulate that the natural area will be maintained inviolate in its natural conditions. A reversionary clause may be inserted to provide for those situations in which the natural area stand has been completely destroyed by conditions outside the control of the managing agency.

North American Program

Your Chairman was especially honored by being selected as one of the advisers on the U. S. delegation to attend the first session of the North American Forestry Commission which was held in Mexico City on July 24-29. Opportunity was afforded at that meeting to discuss rather briefly the objectives of the Committee on Natural Areas. The following is taken from the official minutes of that meeting:

"Topics for Future Sessions of the Commission.

"(b) Preservation of Natural Forest Areas. Attention was called to the current activities of the Society of American Foresters in the U.S.A. through its Committee on Preservation of Natural Forest Areas."

It is possible that the natural area program which we are following with-

in the United States may become a pattern for our neighbors to the north and to the south so that ultimately a natural area program may be applied to the entire North American continent.

In closing, may I take this opportunity to thank the members of the Committee, Messrs. Neil Hosley, Richard Griffith and Ivan Sims, for their help and guidance. I also wish to say that I, personally, have enjoyed working on the natural area program, that I have appreciated the support afforded the program by the officers of the Division of Silviculture. Finally, I bespeak your support for my successor, Donald Lynch, who, with the concurrence of the Council of the Society, assumes the leadership of the Committee as of this moment.

JOHN F. SHANKLIN, *Chairman*

Report of the Committee on Forest Tree Improvement for 1961

The principal activities of the Committee during the past year have been the publication of the report on a Study of Seed Certification, considerable activity related to the problem of seed certification, and the compilation of a directory of research workers in this field in the United States, a project which is now well under way.

The extensive work leading to the preparation of the seed certification report was described last year to this group by the previous Committee chairman, R. T. Bingham. This report was published in the September 1961 JOURNAL OF FORESTRY. It was drafted by members of our Seed Certification Subcommittee under the leadership of Paul Rudolf and after review by all committee members and others. Reprints of this report can be obtained either from Paul Rudolf or from the chairman of the Committee.

The work of the Seed Certification Subcommittee is continuing in an effort to reconcile various conflicting viewpoints, both within the forestry profession and between foresters and others interested in tree seed and in agricultural seed. To this end, Paul Rudolf has recently officially represented both our Committee and the Society as a whole, at the meeting of the Joint Legislative Committee of the American Seed Trade Association, the International Crop Improvement Association, the Association of Official Seed Analysts, and the Association of American Seed Control Officials. At this meeting he presented the viewpoints of foresters as revealed by the Subcommittee's now published report. Caution in adoption of legislation was requested, although proposed legislation only pertains to seed labeling requirements and not to seed certification.

We will continue to explore methods of cooperation and coordination with agricultural groups interested in seed certification. Paul Rudolf will attend the annual meeting of the International Crop Improvement Association in the near future in Des Moines, at which we hope and expect that our proposed modifications to the now-existing ICIA minimum seed standards will be adopted.

One often-forgotten consideration has become clear: we need to remember that there are other large groups besides foresters who have a vital interest in tree seeds, particularly nurserymen and Christmas tree growers. These groups, and the agricultural seed people, are all sincerely working toward the same goals that we are. They are most anxious to cooperate with us, welcome our active interest in this field, and have no desire to ram legislation "down our throats."

Our Subcommittee also plans to continue educational activities in this field of seed certification, recognizing that there is much to be done along this line before substantial progress can be made toward seed certification.

The second activity of the Committee, the preparation of a directory of research workers in tree improvement in the United States, will supplement the foreign directory and provide as complete a world list as we are able to compile. This information is just as useful to workers abroad as to Americans, and we are working to get it organized and in print as soon as possible.

Another matter with which the Committee has been concerned is the development of a uniform system for literature classification in the field of forest tree improvement. There is a need to expand the categories of the Oxford Decimal System, because of the growing volume of literature in the field. Some proposals have been published; the Committee is examining these proposals. It hopes that by its wide geographic representation and numerous contacts in the field of forest genetics research it can reach a workable consensus to apply to the increasingly formidable problem of information retrieval.

The Committee on Forest Tree Improvement is planning to hold a technical meeting jointly with the Committee on Southern Forest Tree Improvement a year from now, in Georgia, just prior to the 1962 national Society meeting.

H. B. KRIEBEL
Chairman

Report of the Division of Economics and Policy

The Division of Economics and Policy held its annual meeting on October 11. The technical session was attended by approximately 80 persons. The program proceeded as scheduled.

About 25 members participated in the business meeting which followed the technical session.

Considerable discussion was devoted to the possibility of expanding the Technical Session on Economics and Policy at annual meetings. Views of the Council on this question were expressed by W. D. Hagenstein. The need for programs of general interest and to restrict expansion were pointed out. John Fedkiw moved that the Executive Committee be asked to consider alternative means of meeting requirements of forest economists for an adequate technical session and that alternative proposals be submitted to the Division for a vote. The motion was passed.

A second item of interest concerned the establishment of a committee to conduct an intensive investigation of the impact of federal income tax regulations and possible changes upon forest management practices. It was generally agreed that a suitable immediate study of the problem would be timely and valuable, but would require support from outside the Division. Carl Stoltenberg moved that the Executive Committee be requested to consider the question and, if further action is to be taken, to submit such proposals to the Council for approval. The motion was passed.

The following Division officers were elected to serve in 1962:

Chairman: James G. Yoho, School of Forestry, Duke University, Durham, N. C.

Vice-Chairman: G. Robinson Gregory, School of Natural Resources, University of Michigan, Ann Arbor, Mich.

Secretary: Arthur S. Todd, Jr., Southeastern Forest Experiment Station, Asheville, N. C.

William A. Duerr, State University College of Forestry at Syracuse University, Syracuse, N. Y., was elected to the Executive Committee. His term expires in November 1964.

FREDERICK S. HOPKINS, Jr.
Secretary

Report of the Division of Range Management

Not received.

Report of the Forest Mensuration Group

In August 1961 a memorandum was distributed to all forest schools and several government agencies in the United States and Canada to ascertain interest in meetings of those seriously concerned with forest mensuration problems of all kinds. By October 1, 1961, responses had been received from 38 forest schools and over 45 state, provincial and federal agencies involving 90 men who were interested and who proposed items for discussion.

Through the excellent cooperation of Professor R. Brown, arrangements were made for an initial meeting to be held at 7:30 p.m., October 10, in the Hotel Leamington in Minneapolis. Despite a conflict with several strong alumni meetings, approximately 50 people attended this meeting. Of this number over half had not been previously contacted so that the list as of October 11, 1961, stands at 137 people. Anyone who reads this report and wishes to become affiliated with this group may do so simply by writing to the group reporter.

The meeting consisted of two hours of spirited discussion concerning organizational affiliation within the SAF and CIF, organizational structure items to be discussed, methods of discussion, and avenues of communication.

As indication of high esteem for their lifelong contributions to mensuration, mensurationists and the forestry profession, the following are the Honorary Chairmen of the group:

F. X. Schumacher, professor emeritus, Duke University

T. W. Dwight, professor emeritus, University of Toronto

The following Committees were appointed:

1. Executive Committee:
   Thomas Evans
   A. Bickerstaff
   J. Harry G. Smith
   Harold E. Young
2. Committee on Forest Mensuration Courses Syllabi:
   Charles Minor
   George Furnival
   Kenneth Ware
   George Thompson
   A. L. Van Slyke
3. Committee on Current and Future Problems in Mensurational Research:
   T. G. Honer
   L. Sayn-Wittgenstein
4. Committee on Fields of Interest:
   Thomas Nelson
   James Bamping
   Gene Avery
5. Committee on Evaluating Instruments:
   James Jameson

The activities of these committees will be coordinated by the Executive Committee. There was general agreement that a free flow of ideas for the stimulation of progress in mensuralia is vital.

The Executive Committee will plan regional meetings and daytime meetings at the next annual meeting of both the SAF and the CIF.

HAROLD E. YOUNG, *Reporter*

Council's Column

Toward a More Professional Society

The Society of American Foresters was founded 61 years ago this month. Its seven founders intended it to be a professional society. When the late Henry Solon Graves was asked by a friend what he did, the latter remarked, upon learning that Graves was teaching foresters, "You are training men for a profession that doesn't exist."

From our seven Charter Members we have grown to a roster of nearly 14,000 trained and experienced forestry practitioners, teachers, researchers, and technicians. Forestry no longer is concerned only with trees. It includes the whole gamut of biological and physical features of forest land. As a science it is based on biology. As an art it combines biology, engineering and economics. As a profession it serves mankind.

In its earlier years our Society zealously built a profession from nothing. It waded right in and took on all comers who ridiculed or belittled foresters as "impractical visionaries." It early established standards for professional forestry training which recognized that serving the public interest through competent performance was the basic responsibility of a profession.

As forestry knowledge increased through better professional training, the horizons of forestry were considerably broadened from the original concept of merely growing trees to managing forest land for all its resources, benefits and opportunities. This resulted in specialization and ushered in the era of the forestry technician. Foresters began to be trained as specialists in silviculture, entomology, pathology, economics, wood technology, forest engineering, recreation, grazing, and watershed management. With the specialization has come less cohesion of our profession. As one of our colleagues expresses it, we have become a society of technicians. This is evident from the ten-ring circus our Annual Meeting has become where we divide into the half- and full-day technical sessions of the subject matter Divisions to discuss methodology, procedure, research, and experience. This has trespassed on time which should be devoted to the vital issues of the day.

In the last four years there has been a definite trend, resulting from grassroots demand of the membership, for the Society to take a more active part in forest policy and other professional issues. The discussion on wilderness and pesticides in 1958, on licensing and registration in 1959, and wilderness again in 1961, are good examples.

Membership response to these discussions has been stimulating and has resulted in at least one instance in a referendum to measure the opinion of our profession on a vital public forest policy.

Our professional society has a No. 1 responsibility to both the public and its members to assure a high level of competent forestry performance by its members. This requires exchange of both professional and technical information in our local and national meetings and through our publications.

With an obvious reversal of our trend toward a society of technicians to a more professional society once again, it is the writer's opinion that our Annual Meetings must be reorganized to have enough general sessions to allow adequate discussion of the current issues. This is the bounden duty and solemn obligation of the Society of American Foresters if it is going to lead forestry in America.

W. D. HAGENSTEIN

Back Issues of Forest Science Needed

Back issues of *Forest Science* are needed to supply new institutional subscribers (libraries, etc.) with complete sets of this periodical. Thus, research workers will have full access to all material published in this journal. The Society of American Foresters will, therefore, be pleased to pay postage or express charges to individual subscribers who have discontinued their subscriptions or who otherwise may wish to donate copies to a good cause. Packages should be addressed to Society of American Foresters, Mills Building, 17th St. at Pennsylvania Ave., N.W., Washington 6, D. C.

Coming Events

Southeastern Section

The Southeastern Section will hold its annual meeting at the Whitley Hotel, Montgomery, Ala., January 11-12, 1962.

To the Membership

Your Nominating Committee wishes to extend our thanks to the membership for making our task an easy one. The minimum requirements for nominations for the biennial election of 1961 were met and exceeded through nominations by petition. Thus the voting members have had a wide choice from which to select the officers they want to administer the Society throughout 1962-1963 without the necessity of any candidate being handpicked by our Committee. This, we believe, is as it should be and in keeping with the democratic policies of the Society.

SETH G. HOBART, *Chairman,*
Nominating Committee

Retired Status

Members and Fellows of 20 years or more standing who retire from full-time employment, either in forestry or other fields, with consequent substantial reduction in income, may, upon application to the Council, continue as voting members. Their dues are remitted except for an annual charge of $5 should they desire to receive the JOURNAL OF FORESTRY and other Society publications.

Members granted such retired status in the Society must continue to pay Section dues in order to continue as Section members.

Inactive Status

Society members in good standing, temporarily serving in the armed forces, may request that they be placed on inactive status. Inactive members do not receive copies of the JOURNAL OF FORESTRY, nor are they permitted to vote. They are considered as members of the Society and may be restored to active status upon request when returning to civilian life, with payment of current dues only.

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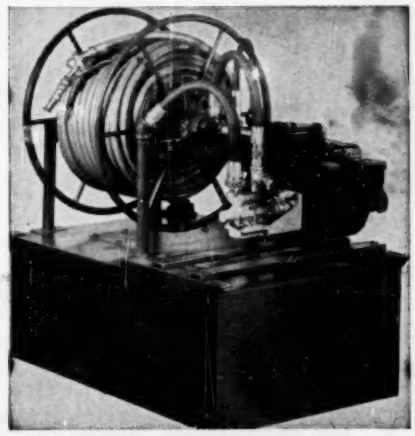

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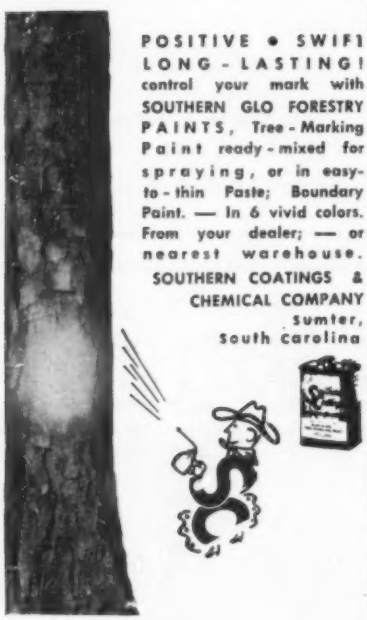

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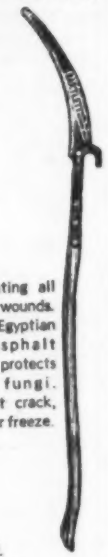

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Proposals for admission, advancement, and reinstatement received in the Society office during the month of October are listed below.

Action on the eligibility of those proposed for membership as listed below will be taken by the Council as of December 31, 1961.

Communications from the voting members regarding the membership eligibility of these persons should be received in the Society office prior to that date.

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Cary, R. E.
Kessler, R. R.
McNeel, V. E.
Singer, F. P.
Williams, G. H.

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Bullard, R. P.
Kohut, D. J.
Leavitt, P. D.
Lewis, J. I.
Manning, H. L.
Mauk, S. G.
McCurdy, D. K.
McElroy, J. E.
Merrihew, W. S.
Miller, T.
Odum, J. S.
Parlier, J. F.
Porter, W. L.
Robbins, J. A.
Rust, C. W.
Scull, R. S.
Setliff, E. C.
Srago, M. D.
Starnes, L. W.
Thomas, J. E.
Warner, R. D.
Weiller, D. H.
Burgess, R. M.
Burke, R. H.
Byrd, J. T.
Chandler, J. L.
Conner, B. J.
Connor, B. W.
Cordell, C. E.
Coville, E. M.
Eakes, J. C.
Floyd, B. R.
Foreman, C. B.
Franklin, E. C.
Gardner, J. D.
Howell, J. F.
Jackson, L. K.

Junior Grade

Kallmeyer, F. B., Forester, Riegel Paper Corp., Bolton, N. C. State Univ. College of Forestry at Syracuse Univ., BSF, 1956.

Strawn, W. H., USFS, Lenoir, N. C. (Reinstatement).

Affiliate Grade

Lee, E. C., Consulting Forester, Milliken Forestry Co., Columbia, S. C.

Central Rocky Mountain Section

Student Grade

COLORADO STATE UNIVERSITY

Reid, J. E.

Junior Grade

Scholz, K. C., Forester, USDA, Lakewood, Colo. (Reinstatement).

Taylor, H. R., Dist. Forest Ranger, USFS, Fort Collins, Colo. Colo. State, BSF, 1956.

Member Grade

Hovey, A. B., Forester, USFS, Sheridan, Wyo. (Reinstatement).

Central States Section

Student Grade

PURDUE UNIVERSITY

Carlile, E. A.
Johnson, A. B.

Junior Grade

Menzie, J. F., Farm Forester, State of Ill., Harrisburg, Ill. Pa. State, BSF, 1941.

Columbia River Section

Student Grade

OREGON STATE UNIVERSITY

Lindner, J. G.

Junior Grade
Students Eligible for Automatic Advancement

OREGON STATE UNIVERSITY

Stenkamp, P. R.

Member Grade

Hummel, D. L., Rocky Point Rt., Klamath Falls, Ore. (Reinstatement).

Gulf States Section

Affiliate Grade

Brumfield, S. M., Mgmt. Forester, Miss. Forestry Comm., Philadelphia, Miss.

Davenport, M., Adm. Ass't., Kirby Lbr. Corp., Houston, Texas.

Rhodes, J. R., Dist. Forester, Miss. Forestry Comm., Tupelo, Miss.

Inland Empire Section

Junior Grade

Luer, E. E., Forester, USFS, Spokane, Wash. Mont. State, BSF, 1929.

Intermountain Section

Junior Grade

Holt, M., Forester, USFS, Boise, Idaho. Utah State, BSF 1960.

New England Section

Student Grade

UNIVERSITY OF MAINE

Morse, S. H.

UNIVERSITY OF MASSACHUSETTS

Hilton, R. L. Peoples, R. A.
Holmes, C. A. Perkins, H. C.
McLaughlin, G. E. Swart, J. S.

UNIVERSITY OF NEW HAMPSHIRE

Crabtree, A. F.

Junior Grade

Weston, K. G., P.O. Box 487, Bristol, Vt. (Reinstatement).

Affiliate Grade

Tompkins, R. I., Dist. Forester, St. Croix Pulpwood Co., Calais, Maine.

New York Section

Student Grade

STATE UNIVERSITY COLLEGE OF FORESTRY AT SYRACUSE UNIVERSITY

Cook, G. D.

Northern California Section

Student Grade

UNIVERSITY OF CALIFORNIA

Barnes, C. F. Cortell, J. S.
Beach, G. L. Grimmell, C. C.
Beek, S. L. Lauer, D. T.
Brown, R. D. Melo, J. L.
Caudle, L. J. Snyder, W. W.
Tompkins, D. L.

Junior Grade

Taylor, G. W., Forester, USFS, Nevada City, Calif. (Reinstatement).

Member Grade

Robinson, G. P., Forester, Southern Pacific Co., San Francisco, Calif. (Reinstatement).

Ozark Section

Student Grade

UNIVERSITY OF MISSOURI

Alley, J. A. Stryker, R. G.
Coonce, L. F. Summers, G. D.
Dubrouillet, D. G. Underwood, E. C.
Hodgeboom, F. D. Weiss, M. J.
Rassfeld, R. S. Wood, J. M.
Salmons, F. J. Worthington, G. R.
Shaw, J. A. Zeorlin, C. P.

Junior Grade

Thompson, W. J., Dist. Forester, Crossett Co., Monticello, Ark. Mich. College of Mining & Tech., BSF, 1952, Univ. Mich., MS, 1958.

Member Grade

Bryan, W. J., Forester, USFS, Russellville Ark. (Junior 1951 Rein. 1955).
Cabaniss, G. W., Forester, USFS, Russellville, Ark. (Junior 1955).
Hilgemann, W. O., Ass't. Dist. Ranger, USFS, Jasper, Ark. Univ. Mo., BSF, 1959 (Junior 1958).
Williams, J. A., Forester, USFS, Mountain View, Ark. Pa. State, BSF, 1955 (Junior 1956).

Affiliate Grade

Bell, G. T., Forester, USFS, Waldron, Ark.
Hartung, R. E., Woodland Cons., Soil Cons. Service, Columbia, Mo.

Puget Sound Section

Student Grade

UNIVERSITY OF WASHINGTON

Mathies, J. B. Swift, J. P.
Petersen, K. T. Teevin, T. W.
Wall, B. R.

Southeastern Section

Student Grade

UNIVERSITY OF GEORGIA

Allgood, N. Knight, B. H.
Barbot, W. R. Lanier, J. V.
Griffith, W. C. Seabrooke, L. F.

Junior Grade

McDonough, L. A., Inspector, Union Bag-Camp Paper Corp., Savannah, Ga. Univ. Ga. BSF, 1948.
Weed, F. R., Forester, Fla. Pulpwood Co., Wewahitchka, Fla. Mich. State, BSF, 1948.

Affiliate Grade

Sellers, T., Grad. Student, Auburn Univ., Auburn, Ala.

Southwestern Section

Junior Grade

Bell, F. C., Forester, USFS, Albuquerque, N. Mex. Colo. State, BSF, 1952.
Morris, R. C., Forester, Nat'l. Park Service, Santa Fe, N. Mex. Mont. State, BSF, 1949.

Upper Mississippi Valley Section

Student Grade

IOWA STATE UNIVERSITY

Aegerter, J. C. Kline, J. P.
Bassett, R. L. Mitchell, C. J.
Blott, J. T. Rocca, J. P.
DeVilbiss, J. M. Rydberg, R. V.
Easter, G. H. Scott, L. A.
Foley, C. D. Spinner, W. F.
Hathaway, M. B. State, T. E.
Kesselring, R. D. Stepanek, D. E.
Streeby, L. L.

UNIVERSITY OF MINNESOTA

Chase, M. E. Kirkwold, L. L.
Foster, R. M. Niemi, R. E.
Hartmann, P. H. Panek, R. E.
Hunkins, P. K. Torgersen, W. D.
Jacobson, J. E. Wetzel, C. R.
Kenops, D. L. Yurczyk, F. J.

Junior Grade

Thorud, D. B., Grad. Student, Univ. of Minn., St. Paul, Minn. Univ. Minn., BSF, 1958.

Wisconsin-Michigan Section

Student Grade

MICHIGAN COLLEGE OF MINING AND TECHNOLOGY

Hickey, D. L. Hietikko, R. A.
Wood, W. B.

UNIVERSITY OF MICHIGAN

Burge, W. G. Higgs, C. E.
Eubanks, J. F. Kleppek, H. C.
Ruopp, J. W.

Junior Grade
Students Eligible for Automatic Advancement

UNIVERSITY OF MICHIGAN

Woelfel, R. I.

No Section

Corresponding Grade

Cirilo A. Arellamo, Sr. Forester, Bur. of Forestry, Manila, Philippines.
Tomas F. Bermillo, Ass't. Dist. Forester, Bur. of Forestry, Manila, Philippines.
Ireneo L. Domingo, Instructor in Silviculture, Univ. of the Philippines, Laguna, Philippines.
Ly Chhay Heang, Univ. of Ga., Athens, Ga.
M. H. Kayacik, Prof., Forestry Faculty, Istanbul, Turkey.
Chim Sotuon, Forestry Student, Dept. of Agric., Phnom Penh, Cambodia.
Mansur M. Sughayer, Ass't. Forest Officer, Forestry Dept., Tripoli, Libya.

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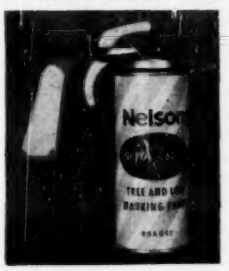

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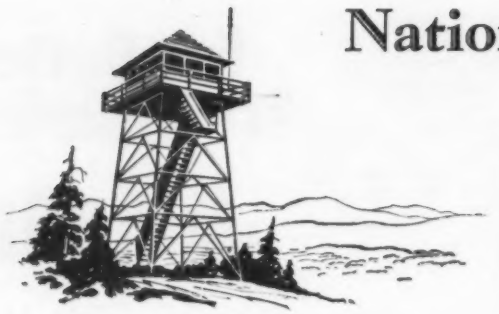

Good Words for Forests. "Our forest and timber lands with their majestic beauty and universal appeal, provide recreation and inspiration to the people of the Nation . . . Through wise management, use, and renewal, and the development and application of scientific knowledge, our forest lands will continue to supply products for the ever-growing needs of the Nation—lumber, paper, building materials, chemicals, furniture, and cloth—all essentials in improving the lives of our people."

So said President Kennedy in proclaiming National Forest Products Week in October, to "focus attention on the importance of our forests and forest products to the Nation's continued economic growth and well-being." The Week is now an annual event by legislative fiat. Congress last year passed a joint resolution designating the seven-day period beginning on the third Sunday of October each year as National Forest Products Week.

Nation's Christmas Tree. The State of Washington is providing the "National Christmas Tree" which will be lighted this year in the National Capital. The tree, a 75-foot Douglas-fir, comes from lands of the Weyerhaeuser Company near Aberdeen, and is traveling across the continent by rail. It will be set up on the Ellipse, south of the White House, and decorated with hundreds of lights. According to plans which were still tentative as this was written, the President will throw on the switch to light the tree in a nationally televised ceremony on the evening of December 23.

Recreation Report Coming. The report of the National Outdoor Recreation Resources Review Commission will be forthcoming at the end of January. The Commission's comprehensive study of the country's outdoor recreation resources and needs was ordered by Congress in 1958, and the original date for the report was set for last September. But Congress neglected to provide money for the study, and the Commission was delayed almost a year in getting started. An extension to January 31, 1962, was granted. In addition to the basic over-all summary of the Commission's findings and conclusions, some thirty additional volumes of back-up studies will be published. Some of these additional volumes may not get off the press until after the main report has been released.

Most of the background studies were made for the Commission by other organizations or agencies, such as a wilderness study by the University of California, and a study of private land recreation resources by Agricultural Research Service.

The Commission is made up of seven citizens appointed by the President, four members of the Senate, and four members of the House of Representatives. Its chairman is Laurance S. Rockefeller of New York. An advisory council, made up of representatives of a number of private organizations and government agencies, has met jointly with the Commission on five occasions during the past two years. All major proposals have been presented to the advisory council for review.

National Forest Development. "A Development Program for the National Forests" has been transmitted by the President to Congress for consideration when Congress reconvenes in January. The new program, which expands and updates the "Program for the National Forests" submitted to Congress in 1959, was prepared by the Department of Agriculture in response to the President's request in messages to Congress early this year for acceleration of forest development on public lands. The new program calls for further development of recreation resources, and increased multiple-purpose road and trail construction. Annual timber harvest in the national forests would be increased from 11 to 13 billion board feet by 1972. Purchase of 1,450,000 acres of "key tracts" of recreation lands and other inholdings during the next ten years is proposed. Estimated costs of the program for nonrecurrent project work (development and capital investment) would total some $2.5 billion over a ten-year period.

Program for Small Woodlands. It may be some months before the Department of Agriculture presents its new program for forest lands in small ownerships. The preliminary draft which has been under preparation in the Department's Forest Service, still has to be reviewed by various federal and state agencies affected before it is put in final form for presentation to Congress. The new small woodlands program was called for by the President. In his special message on natural resources last February he said: "I am directing the Secretary of Agriculture, in cooperation with appropriate federal and state agencies, to develop a program to help small independent timber owners and processors attain better forest management standards and more efficient production and utilization of forest crops." In a later message, relative to American agriculture, President Kennedy declared that certain administrative and legislative measures were needed, including:

Acceleration of the federal-state cooperative technical assistance program for small-forest owners.

Expansion of tree planting.

Increased protection against fire, insects, and diseases, with the federal government meeting its share of the burden in fire control.

Emphasis of incentive cost-sharing programs with owners for tree planting, timber stand improvement, and certain other practices under the agricultural conservation program.

Expansion of forestry research.

Encouragement of management and marketing forest cooperatives.

These Presidential specifications may indicate the general lines which the small woodlands program will take.

New Home for NLMA. The National Lumber Manufacturers Association has moved to new headquarters. It is now in a Forest Industries Building in the National Capital. The new address: 1619 Massachusetts Avenue, N.W., Washington 6, D.C.

International Association's Actions. Among resolutions adopted by the International Association of Fish, Game and Conservation Commissioners at this year's meeting in Memphis, Tenn., were a request for prompt federal action to regulate pesticides, and a proposal that the federal government recognize fish, wildlife, and general recreation as primary justification for federal works projects. Other resolutions requested the federal government to allow state game and fish commissions to obtain

surplus government property without charge, urged passage of the Wilderness Bill, called for an end to federal assistance for waterfowl wetlands drainage, urged application of the Coordination Act to highway construction, and commended the Interior Department for undertaking multiple-use management on the public lands. The Association established a committee to study and draft legislation to develop marginal land for outdoor recreation.

President of the Association for the next two-year term is Hayden W. Olds, Ohio Department of Natural Resources; first vice president, Frank R. Butler of the British Columbia Department of Recreation and Conservation; second vice president, Frank Groves, Nevada Fish and Game Commission. Ross Leffler, former Assistant Secretary of Interior, was named general counsel.

Pulpwood from State Forests. The American Pulpwood Association, with the cooperation of state foresters, has compiled a report on pulpwood harvested from state forest lands for the years 1959 and 1960. Total 1960 harvest of 727,382 standard cords showed an increase of 100,000 cords over 1959. The 1960 cut was 2½ times the total estimated cut from state forest lands in 1952.

Tree Farms. The nation's certified tree farms reached a total of 21,215 in number as of September 1, according to American Forests Products Industries, Inc. Aggregate area was 56,671,952 acres.

Pest Control Review Board. The President recently announced the establishment of a Federal Pest Control Review Board to coordinate efforts of federal agencies engaged in pesticide control programs in minimizing harmful effects on public health and on wildlife. This Board replaces the informal interagency pesticides coordinating committee set up last summer. The new Board is composed of representatives of the Departments of Agriculture, Defense, Interior, and Health, Education and Welfare. Dr. Robert J. Anderson of the Public Health Service has been named chairman. The Board will serve in an advisory capacity to the Departments represented. Presumably, it can accomplish through administrative procedures many of the proposals advanced in the "Chemical Pesticides Coordination Bill" introduced in the last session of Congress by Rep. Dingell of Michigan. That bill, however, would require federal agencies to notify the Fish and Wildlife Service before initiating a chemical pest control program.

Iowa Units Ended. Back in the 1930's, as one of the measures to help relieve depression, a greatly accelerated program of federal land purchases under the Weeks Law took place. The National Forest Reservation Commission approved the establishment of many new purchase units. Large areas of forest land, much of it tax delinquent and in rundown condition from destructive cutting and repeated fires, were purchased for development as national forests. A number of highly successful national forests in the states east of the Great Plains had their beginnings in this period. Four purchase units that were set up in southeastern Iowa, however, never got going. In two of them, no land purchases ever were made, and they were dropped several years ago. In the other two, the Chequest and Keosauqua units, the Forest Service bought some scattered tracts that added up to about 4,700 acres. Then World War II came along and the Forest Service suspended land purchases.

After the War, the Forest Service decided that with improving land management practices in the area the need for national forest development there had lessened, and that it would not be practicable to set up administration for the scattered tracts already purchased. NFRC approved elimination of the two remaining purchase units in 1956. The State of Iowa has indicated an interest in the lands for game management and other conservation purposes. This year, in the closing days of the last session, Congress passed legislation authorizing the Department of Agriculture to sell its holdings in the purchase units to the state at an appraised fair value. If the state doesn't choose to buy the lands within two years, they can be disposed of through public sale.

Superior National Forest. Appropriation of an additional $2 million has been authorized by Congress for federal purchase of lands in the Boundary Waters Canoe Area of the Superior National Forest, Minnesota. The measure, enacted near the end of the last session, also removed the restriction in an earlier law which had prohibited condemnation of tracts of less than 500 acres if the owner had structures on the land.

Cooperative Areas. In setting up the Caliente National Cooperative Land and Wildlife Management Area in California last spring, the Department of Interior established a new type of cooperative management for a federal public land area. Interior's Bureau of Land Management and Bureau of Sport Fisheries and Wildlife are administering the 58,868-acre tract in cooperation with California state agencies to develop the wildlife, recreation, and other resources. More recently, the Interior Department established six more areas in California. Designated were the Medoc Valley, Panoche, New Idria, Temblor, Mt. Dome, and Cinder Cone National Cooperative Land and Wildlife Management Areas, totaling some 260,000 acres of the national land reserve. Like the Caliente area, they will be managed cooperatively for "the appropriate development, conservation, utilization, and maintenance of the lands and the resources thereon." The lands are withdrawn from application under the land laws, but may be open to mineral leasing and grazing if compatible with other uses.

Salaries Upped. A bill giving the federal government 785 additional supergrade and other high-salaried jobs was passed by Congress in the closing days of the last session. Congress specifically earmarked some of these jobs, among them the Chief of the Forest Service, and the Administrators of Soil Conservation Service and Farmers Home Administration. These executives will get pay boosts.

To Save Water. A new land management policy of the Interior Department will prohibit land entries on public lands in areas with declining water tables. The policy is designed to "discourage mining of ground-water reserves beyond annual replenishment."

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Letters

Small Tracts

T. A. McClay's article on page 88 of the February 1961 JOURNAL listed certain facts about small private woodland properties. Among other unfavorable findings, he shows that many owners were not interested in forestry. He believes (page 92) that leasing or some other group arrangement appears to offer a means by which forest improvement could be extended to many small ownerships.

I agree with McClay's thought.

A frequent pattern finds the back parts of small tracts to be wooded, and to adjoin wooded parts of other ownerships. The timber of one tract often can't be operated economically because of small size, because the chance does not fit logical operating conditions, because right-of-way access must cross another owner, and so on. A lumberman who buys one tract of timber often is forced to buy the timber or right-of-way from one or more owners.

Therefore, the woodland parts of small tracts should be consolidated by purchase into holdings of sufficient size so that the new owner could practice good forestry. Many of the new owners could be lumbermen. Frequently the full title could be bought with little more money than it would take to buy the timber. Foresters or others who could obtain long-term reasonable interest-rate loans would be logical participants.

This kind of consolidation is being done here and there, but not usually with tracts in the 75-100 acre size.

The facts brought out by McClay indicate that this kind of consolidation offers a good solution to much of the "small woodlands problem."

HENRY SIPE
Elkins, W. Va.

Protest

Some years ago I wrote a letter, published in the JOURNAL, remonstrating against the practice of electioneering by mail for candidates for Fellow. I thought it then, as I do now, most inappropriate to try in this way to get nominees honored by our professional Society.

I received much favorable comment on my letter, indicating that other Fellows agreed with my objection to wholesale attempt to influence the vote of the electors.

This year we have 48 candidates for the grade of Fellow. So far I have been solicited by circular to vote for three. It is grossly unfair to those who will *not* allow their friends to publicly electioneer for them to have a few candidates extolled by circular letters—even with a picture of a candidate.

The official biographies sent out by the SAF office are full and unprejudiced. They should be the basis for selection to the grade of Fellow, not the biased statements of a candidate or his friends or even of his Chapter.

We must not let the Society debase the grade of Fellow by having the election depend on market-place politics.

Perhaps the Council should adopt a policy to discourage this practice before the election of Fellows becomes further commercialized.

THORNTON T. MUNGER
Fellow, SAF
Portland, Ore.

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Forestry News

OUTGOING president of the Association of State Foresters, A. D. Folweiler of Texas, turns over the gavel to the newly elected president, Ralph Wible, Pennsylvania. Pictured *left* to *right* are Dwight Phipps, board member, Oregon; John Beale, secretary-treasurer, Wisconsin; Francis Raymond, vice president, California; Wible and Folweiler.

State Foresters Meet

The Association of State Foresters held its 39th annual meeting in Macon, Ga., October 1-5.

Ralph Wible of Pennsylvania was elected president; Francis Raymond, California, is new vice president.

Among other speakers during the five-day meeting was Dr. Frank Welch, assistant secretary of the U. S. Department of Agriculture, who assured the state foresters that the Kennedy Administration has a "vital interest" in their work.

The Georgia Forestry Commission was host for a day's field trip demonstrating Commission activities, Georgia forestry, and the Georgia Forestry Center, which includes buildings housing the Commission's state headquarters, the Southern Forest Fire Laboratory, the Eastern Tree Seed Laboratory, plus other research and operational activities.

86th AFA Annual Meeting

The American Forestry Association held its 86th annual meeting at Santa Fe, N. Mex., October 1-4. Some 500 persons were in attendance.

Sunday, October 1, was devoted to a "Trail Ride," enjoyed by 74 participants, in the Pecos Wilderness. On the morning of October 2 highlights of the opening general session were the presentation of AFA's Distinguished Service Award to United States Senator Carl Hayden on his 84th birthday and an address by Secretary of the Interior Stewart L. Udall, "The Stewardship of our Public Lands."

The annual banquet was held on the evening of October 4 with Edward P. Stamm, vice president of AFA, as toastmaster. Principal speaker was Senator Clinton P. Anderson of New Mexico.

Between the general sessions and the annual banquet, members and guests enjoyed a series of field trips to points of interest and land use areas of the region.

During the meeting of the board of directors of AFA a special Public Lands Committee was appointed by President Don P. Johnston and the board to review proposals for the establishment of new national parks and recreation areas. Members of the committee are Dean Stanley G. Fontanna, University of Michigan School of Natural Resources; Edward P. Stamm, AFA vice president and former vice president of Crown Zellerbach Corporation; and Lloyd E. Partain of the Curtis Publishing Co. The committee will report to the board of directors in February 1962 and hopes to arrive at a set of principles that will serve as a policy guide for AFA.

Three U. S. Foresters Attend FAO Conference at Rome

Representing American forestry at the conference of the Food and Agriculture Organization of the United Nations, held in Rome, Italy, October 30-November 23, were Richard E. McArdle and Robert K. Winters of the U. S. Forest Service and Henry Clepper of the Society of American Foresters.

They served as forestry advisers to

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the U. S. delegate, Hon. John P. Duncan, Jr.; Assistant Secretary of Agriculture, and represented the United States on the FAO Technical Committee on Forestry.

A report on the work of the conference will be published in the January issue of the JOURNAL OF FORESTRY.

Kaiser Gypsum Company Appoints Forester

Erwin Kulosa has joined the Kaiser Gypsum Company as assistant to the manager of wood supply and will be located at St. Helens, Ore.

In his new assignment Kulosa will assist in the management of the company's timberlands in Oregon and Washington as well as the procurement of wood chips required in the manufacture of insulating and acoustical products at the St. Helens plant.

Formerly resident forester for a wood products company in northern California, Kulosa graduated from Michigan State University School of Forestry in 1950 and received a Master degree in forest management from Oregon State University in 1955.

Kulosa replaces Keith Petrie who recently joined the Industrial Forestry Association.

Southern Pine Association Doubles Technical Division

In line with its program of expansion to accelerate the progress and growth of the lumber industry, the Southern Pine Association has made major additions to its technical and public relations staff.

Appointments to SPA's technical division include two recent Master of Forestry graduates from Louisiana State University, an architectural engineer from the University, an architectural engineer from the University of Texas, a Bachelor of building construction from the University of Florida, a forest products technologist from the University of Missouri, and a wood technologist from the University of Illinois.

FFA Forestry Winners Tour

Six outstanding young farm boys from six southeastern states, members of the Future Farmers of America who were selected for their accomplishments in forestry in a cooperative program sponsored by the Seaboard Air Line Railroad Company, were the principal speakers at a special luncheon given by the Seaboard Railroad in their honor on October 9 in Philadelphia, Pa., and at the regular luncheon program of The Rotary Club of Baltimore on October 10 in Baltimore, Md. Both luncheons were attended by top business and industrial leaders in the respective areas. The young farm boys were accompanied by Robert N. Hoskins, general forestry agent, who heads the Seaboard's forestry program.

These cities were two stops in a tour which carried them to Richmond, Va., New York City, Philadelphia, Baltimore and then on to Kansas City, Mo.,

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where they attended the National Convention of the Future Farmers of America held annually at that point.

Allied

Shanklin Appointed to Nature Conservancy Board

Among the new board members elected by the Nature Conservancy at an August meeting of that organization in Indiana was John F. Shanklin. Mr. Shanklin is staff assistant in the Office of Assistant Secretary, Public Land Management, U. S. Department of the Interior, and until recently has been long-time chairman of the SAF Committee on Natural Areas.

Northwest Forest Soils Council Meets

The summer two-day field meeting of the Northwest Forest Soils Council was held in the Tiller Ranger District of the Umpqua National Forest of southwest Oregon. Some 50 foresters and wildland managers from the Pacific slope from British Columbia to central California inspected the pilot forest land soil survey project recently completed by the Forest Service. An evening business meeting was held.

E. C. Steinbrenner, Weyerhaeuser Company soil research specialist, is Council chairman.

Texas Association Re-elects Officers

Marvin G. Angle, area superintendent, International Paper Co., Nacogdoches, Texas, was re-elected president of the Texas Forestry Association at a special meeting of the Board of Directors attending the 47th annual meeting of the Association in October.

Other officers re-elected were Steve C. Kardell, San Augustine, first vice president; and Lee B. Zeagler, Edens-Birch Division of Southwest Forest Industries, second vice president. E. R. Wagoner, Lufkin, was reappointed executive secretary, a position which he has held since 1955. E. O. Siecke, College Station, is president emeritus.

Public

Heads Eastern Forest Pest Control Work

John K. Kroeber, USFS, Milwaukee, Wis., has been appointed chief of the Forest Pest Control Section, Eastern Region, U. S. Forest Service, it has been announced by Hamilton K. Pyles,

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head of the regional office at Upper Darby, Pa.

Kroeber will supervise control work which deals with forest insects and diseases, in cooperation with the 14 states and 7 national forests in the Eastern Region. A major part of his work will be on cooperative programs.

Mr. Kroeber's span of federal service covers more than 30 years with the U. S. Department of Agriculture. He is a forestry graduate of Michigan State University.

BLM's Lady Forester

The Bureau of Land Management has employed the first woman forester to work in the Department of the Interior. She is Miss Elaine Mosher who graduated in June of this year with a Bachelor of Science degree in forestry from Michigan College of Mining and Technology. In her new job Miss Mosher will serve as technical aide to the chief of the Division of Forest Management and his assistants.

Geneticist Appointed to Lake States

Dr. Knud Erik Clausen, forest geneticist and a native of Denmark, has been appointed to the staff of the Lake States Forest Experiment Station, at the Northern Institute of Forest Genetics, Rhinelander, Wis. This was announced by M. B. Dickerman, director of the Station, which has its headquarters in St. Paul, Minn.

Dr. Clausen was educated in both Denmark and the United States. He received his Ph.D. this summer from the University of Minnesota shortly after becoming a citizen of the United States.

Marketing Specialist Joins Central States

Edwin Kallio, specialist in forest marketing, has joined the staff of the Central States Forest Experiment Station Research Center at Carbondale, Ill.

Kallio will plan and conduct research on the timber products marketing problems of Illinois and Missouri producers, and convert research findings into practical recommendations for improving production and sale of timber crops.

Kallio formerly worked for the Minnesota State Iron Range Resources and Rehabilitation Commission in Hib-

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bing. During his ten years with the Commission (1951-1961), he carried on research and worked in forest management and in forest products utilization and marketing. He was graduated from the University of Minnesota in 1950 with a major in forest management.

Pathologist Retires

Dr. James L. Mielke of Logan, Utah, research pathologist at the Intermountain Forest and Range Experiment Station, retired recently from the U. S. Forest Service after 36 years work with the U. S. Department of Agriculture.

Dr. Mielke had worked with the Bureau of Plant Industry for 27 years before coming to the Division of Forest Disease Research at Intermountain Station in 1953.

A native of Minnesota, Dr. Mielke is a graduate in forestry from Oregon State University and holds a doctoral degree from Yale. During his career he has authored numerous publications dealing with research on forest tree diseases.

Joins Intermountain Staff

John D. Schultz has been appointed research forester at the Intermountain Forest and Range Experiment Station according to an announcement by C. A. Wellner, acting director. He has been assigned to the Water Yield Improvement Project in the Station's Division of Watershed Management Research.

Schultz is a native of Michigan and a graduate in forestry from the University of Michigan. He will receive the doctoral degree in forestry in January. He received the Outstanding Senior award from the Lower Michigan Chapter of the Society of American Foresters in 1957. From 1958 to 1960 he held the Kimberly-Clark Foundation Forestry Fellowship, and was University Fellow, 1960-1961.

Schools

Heads Wood Products Department at N.C. State

The announcement of the appointment of Dr. Eric Louis Ellwood as professor and head of the Department of Wood Products in the School of Forestry at North Carolina State College was made in October by Dr. Richard J. Preston, dean of the Forestry School.

Dr. Ellwood is responsible for the undergraduate curricula in pulp and paper and wood technology and all graduate programs in wood products.

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In addition, he is director of the Wood Products Laboratory and is responsible for the College's research in wood and paper. He is also in charge of the Wood Products Extension Program.

Dr. Ellwood was previously at the Forest Products Laboratory, University of California at Berkeley, as a wood technologist and lecturer. His duties there also included research in timber physics, work in cooperative industrial problems, and graduate student instruction.

Prior to becoming a member of the University of California faculty in 1957, Dr. Ellwood held responsible positions in the field of forestry in Australia.

The new State College faculty member received his early education at Melbourne Boys High School. He attended the Victoria Forestry School, the University of Melbourne where he earned his B.S. and M.S. degrees in forestry, and Yale University where he received his Ph.D. degree.

U. S. Forester Joins Iowa State Staff

Dr. Kenneth D. Ware has joined the Department of Forestry at Iowa State University as assistant professor.

For the last three years, Dr. Ware has been a research forester with the U. S. Forest Service in Upper Darby, Pa. He worked on the development of less expensive and more efficient methods of estimating timber volumes and growth rates for forest areas on a continuing basis.

At Iowa State, Dr. Ware will teach forest mensuration at both the graduate and undergraduate levels. His courses will deal with the mathematical aspects of forestry: estimating measurement of forest products and application of statistical methods to forestry and forest research.

A native of West Virginia, Dr. Ware received the B.S. degree from West Virginia University, the Master of Forestry and Ph.D. degrees from Yale University in 1957 and 1960.

Tree Physiology Workshop Held at Clemson College

The first Southern Forest Tree Physiology Workshop was held at Clemson College, Clemson, S. C., September 6-8, 1961. Twenty-eight invited participants, actively engaged in tree physiology research from Maryland to Texas, met to become acquainted with one another's work and to form personal contacts conducive to free exchange of ideas and information among those interested in similar phases of tree physiology research.

There were no formal papers presented at the workshop. Each session was a round-table discussion on a general topic led by a moderator, everyone being free to enter into the discussion. The session topics and moderators were:

Growth and Development I. Internal Factors—R. M. Allen.
Growth and Development II. Environmental Effects—R. C. Hare.
Absorption, Translocation, and Elimination of Water, Solutes, and Gases—Holger Brix.
General Plant Metabolism and Biochemistry—Robert L. Barnes.
General Session—Business Session—Mason C. Carter.

The workshop was conceived and called by an informal committee composed of R. M. Allen, U. S. Forest Service; Robert L. Barnes, U. S. Forest Service; Mason C. Carter, Auburn University; and Wm. H. Davis McGregor, Clemson College. The Department of Forestry at Clemson College was host-sponsor of the conference.

The group voted to hold a similar meeting in 1963.

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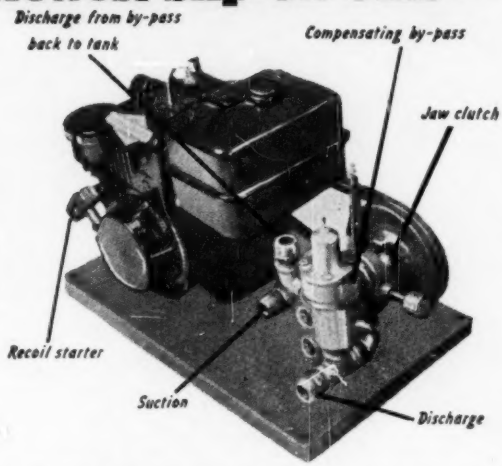

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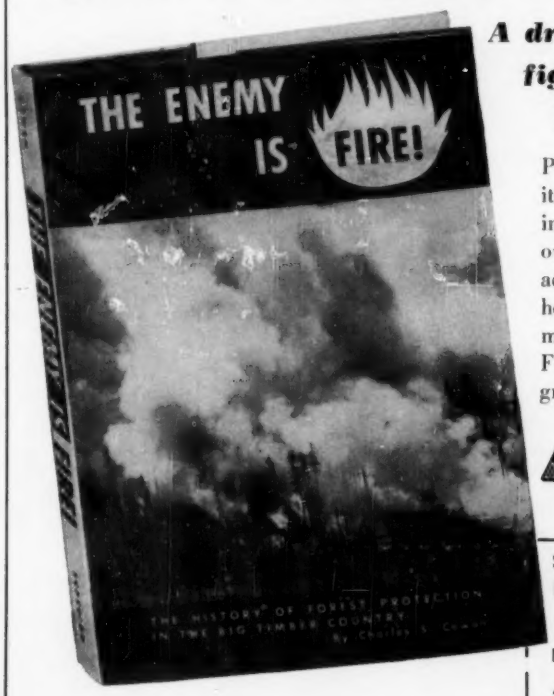

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